

SETH
SOHAN LAL DUGAR
DONATION

400 YEARS OF A DOCTOR'S LIFE

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IN MEMORIAM
PAUL CASPARI, M D
1867-1937

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A WORD TO THE READER

It is strange but not unaccountable that we should know so little about these men who know so much about us. Doctors feel our pulses, tap our knees, listen to rhythms and discords in our bosoms, take all kinds of liberties we permit to no one else. They look at our tongues and eyes, into our minds and hearts. They ask questions about the state of our souls and our stomachs. That is, of course, the doctor's business, if no one else's—to know his patient in a relationship that is intensely personal, perhaps uniquely so. In the consulting room he is concerned not only with physical symptoms, but must also know about his patient's social, economic, and spiritual conditions, which so often he finds closely affecting the clinical problems of diagnosis and cure.

Sometimes, perhaps, we feel like turning the tables on the doctor and are tempted to say "Doctor, you seem a bit out-of-sorts yourself. Are you working too hard? Has a case got you buffaloed? Has something gone wrong with that fishing trip? Is your wife inflicting too much bridge on you?" But we do not ask. It is hardly our business, and, besides, we could be of no help to the doctor if we knew. And so most of us meet our doctors only when they are intent on their professional skills, when they are comforting but impersonal.

What manner of man—or woman—is the doctor who intimately regards the patient and comes to know him so well, but himself remains a professional figure seemingly aloof from the common business of life? This doctor, a member of what has been called "the most humane of all the professions," is also the most human of men. Strange as it seems, this impersonal professional person was once a little boy who lived like other boys and, in due time, grew up much as other people do. He went to school, he chose a career, he worked hard, married and raised a family, succeeded, grew old. In short, he lived in the same world as other men, but in the way in which his own particular profession, with its demands and ideals, set the pattern. His work was doctoring, but he was seldom a one-sided man. He also had time in his life for music, literature, sport, politics. In this book the doctor's life is revealed in all its aspects, so that, reading it, you—the patient—may now examine the doctor.

For such a scrutiny there is no better source of information than the doctor himself. Out of many ventures in medical autobiography made during the past four centuries there have been chosen those passages which are most revealing of the medical human being in the round—that convey something of the substance and marrow of what it means to be a doctor. The aim is to present an informal portrait which will show the doctor not only as the Great Healer or Great Scientist (though these aspects are not neglected) but also

as a citizen of everyman's world To achieve this aim, more than eighty personalities have been selected from among men and women who have made significant contributions to the literature of medical autobiography What these doctors say here reveals to the layman the matrix of a doctor's life and a sense of the sweeping drama of medical history, with a clarity attainable in no other medium From the autobiographical writings of these men and women are chosen passages that range in time from the sixteenth century to the present, and in space through eleven countries Here you meet doctors from Austria, Canada, France, Germany, Great Britain, Italy, Russia, Spain, Sweden, Switzerland, and the United States For the most part the selections have been taken from formal autobiographies, but the literary genre in which the doctor wrote is not of first importance to the scheme Letters and some verses have received equal welcome

We learn from contact with other minds The experiences of our individual lives are broadened and enriched when we hear and speak with men in fields other than our own Herein lies the value of the biographical approach And when the doctor speaks of things he has done and seen and known, whether these be concerned with his profession itself, or with poetry, politics, or with any human wisdom or folly, they remain always personal and imbued with the immediate breath of being, for the doctor, above others, is closest to life and death From the sum of these personal experiences emerges a composite autobiography of *The Doctor*

The wide-ranging words that compose this book have been chosen both because they are eloquent of the personal character of their authors and, at the same time, have a broad human interest Since the doctor has learned to observe and study the well-springs of thought and action, medical autobiography reflects the gamut of the experiences of life One remembers the passage from the late Harvey Cushing's war diary, where, in some of the most moving words ever written by a doctor, he tells of the death of the only son of the great Sir William Osler Again, there is the self-portrait of Rudolf Virchow, who, as founder of cellular pathology, is honored in every history of medicine, but how many know of Virchow the man, or his important role in the political and social life of his time? Read his own story of how he proposed to his wife and see the man of feeling and sentiment who has been obscured by the cold, objective scientist

Doctors, holding the keys to many doors, have often been in a position to communicate uniquely important information about events in which they played a part, or about people and happenings of which they were observers Such writings form priceless historical sources, in many cases so vividly created that we seem to take part vicariously in stirring events long past Whoever reads Benjamin Rush's account of the yellow fever in Philadelphia in 1793 cannot help but feel the terror and dread that stalked the stricken city In like manner, Ronald Ross's description of how he discovered the malarial parasite lets the reader share with this great doctor the breath-taking excitement which

filled him when he first saw, in a mosquito, the answer to the riddle of one of the worst of human diseases

The doctor's story, so close to life, touches in microcosm the conflicts and problems that beset the human family. Of these, none is more shot through with valiance and determination than the struggle of women for recognition in fields of endeavor long closed to them. In the selections from the autobiographies of women physicians, the reader may watch the indomitable fight of women for a recognized place in the medical profession. After reading of the major contributions to human welfare made by some of these doctors, one may wonder at the strange perversity of the male animal in so long denying an equal place to women.

Never before have the dramatic advances of medical research and discovery affected the welfare of so many human beings. The continuous rise in the life-expectancy chart is more than a cold statistic. It means that millions of additional years of living have been given to mankind by its doctors. And these years are better, healthier years than our ancestors knew, because, generation after generation, doctors pursue their purposeful struggle for the prevention of disease and the prolongation of life. This preoccupation, this dedication of doctors to the high ends of their profession has in turn generated a deep and abiding response on the part of the lay public. Popular interest in the figure of the doctor is seen in box-office successes, best-sellers, and Sunday supplements. This interest in the doctor in action comes perhaps from a healthy curiosity about his human attributes and from a desire to know more about the kind of man who knows us so well. Because popular portrayals of doctors are often distorted ones, there is still more reason for letting the doctors tell their own stories.

Here, then, is a book by doctors about doctors. It is, of course, an anthology, but its arrangement is deliberate, shaped to its aim of presenting phases of medical life common to the great majority of doctors, to create at last a portrait of The Doctor. Every anthology is fair game for those who wish to criticise it for what it leaves out. Here you will find unfamiliar as well as familiar names, and it is to be hoped that reproaches for omissions will be tempered by the pleasure of first acquaintance with some worthy son of Aesculapius whose name does not adorn the peaks of medical fame. To facilitate appreciation of the selections, most of them are prefaced by introductory remarks containing biographical or other relevant information. If the reader, in view of the deliberate arrangement of the book, reads the selections in sequence, so much the better, but should random sampling be preferred, who is to say that it is out of order?

I

EARLY YEARS

There was a boy, ye knew him well

Wordsworth

GEORG FRIEDRICH LOUIS STROMEYER

Georg Friedrich Louis Stromeier, the founder of modern German military surgery, was born in 1804 in Hannover, as the son of C F Stromeier, one of the first to introduce Jenner's smallpox vaccination into Germany. After carrying on his studies at Gottingen and Berlin, Stromeier received his medical degree from the latter university in 1826. Graduation was followed by a medical *grand tour* of England and the Continent. In 1838 Stromeier became professor of surgery at Erlangen, but after a short period was called in rapid succession to Munich (1841), Freiburg (1842), and finally to Kiel (1848) where he remained until 1854. He then returned to Hannover where he entered upon a successful career as a military surgeon. After being pensioned in 1866, Stromeier continued his medical practice and during the Franco-Prussian war acted as a consultant surgeon. He died in 1876.

Stromeier's fame rests on his operations for the correction of clubfoot and squint, and on his establishment of basic principles in orthopedics and military surgery. In his *Erinnerungen eines deutschen Arztes* (*Reminiscences of a German Doctor*), 2 vols, 1875, he left a charming account of a long and useful life, and of an important period in the history of surgery.

MY father's happiness was now complete except for a son, and the latter was also not long in coming. It is indeed a consolation to know that at least once in his lifetime one has made one's father very happy, as I did on my birthday, March 6, 1804. Hardly had the midwife attended to my first toilet, when father put me into a large muff belonging to my mother, in order to present me as their first male grandchild to his parents-in-law who lived with him under the same roof. I still have a very good recollection of this muff, my first sign of distinction. It was made of sable, lined inside with white silk, and was large enough to keep the entire abdomen warm, a duty which the ladies often neglect nowadays. They must therefore be reminded of it, and they will be more likely to accept such advice, if one speaks not of the large or small intestines and other plebeian organs, but rather of the solar plexus which innervates them. After this visit of state to my grandparents I wandered into one of those very elegant, but impractical wooden cradles such as grandfathers usually present to their first grandchildren, but which are later usually replaced by a wicker cradle. My father, however, set out immediately to find a wetnurse for me, as my mother had already realized with her first offspring that she would have to give up any idea of nursing her children. Through his cowpox inoculations, my father had come into contact with all the clergymen of the vicinity. These men knew the families where Cupid had been too forward, something that does not occur in their catechism. My father's first voyage of discovery, undertaken to deal with the problem of feeding my oldest sister, had yielded such favorable results that the wet-

nurse became the family factotum Concerning my nurse I know only that her name was Lene, and she disappears from the story after having performed her duty

1792 — 1876

KARL ERNST VON BAER

Born in 1792 in Estonia, Karl Ernst von Baer was the son of a Baltic German landowner After completing his schooling in Reval, he matriculated at the University of Dorpat as a medical student While at school, von Baer came to the realization that he was probably not cut out to be a medical practitioner, but it was only after a period of postgraduate study in Vienna that he turned definitely to theoretical biology In the fall of 1815, a fortunate accident led von Baer to Wurzburg where Ignaz Dollinger (1770-1841), the comparative anatomist, was professor Dollinger was interested in problems of embryology, and here von Baer took up the researches which were later to bring him world-wide fame

After completing his studies he was called to Königsberg, where he remained for seventeen years and where he carried out his principal investigations This Königsberg period marks the highwater mark of his scientific work, for in 1827 von Baer made the most important of his discoveries—he found the mammalian egg in the ovary (see below page 241) In 1834 von Baer accepted an invitation to become a member of the St Petersburg Academy There he was a brilliant success, and was accorded many honors At the request of the Imperial Government, he undertook many journeys to various parts of the Russian Empire, and dealt with problems in anthropology, ethnography, zoology, and geography After celebrating the fiftieth anniversary of his doctorate in 1864, he moved to Dorpat where he lived until his death in 1876 On the occasion of his fiftieth anniversary, the Estonian nobility published at their own expense a de luxe edition of his autobiography Von Baer's remarks on Alexander von Humboldt apply as well to himself "There are often important trends in scientific research through which the deceased continues to exert an influence, and many a one follows the current without a thought of who first opened the flood-gates"

I ARRIVED in this world on February 17, 1792, old style My birth-place is the Piep Manor in the Jerwen district of the Province of Esthonia

My father, Magnus von Baer, later administrative head of the district and of the nobility (Landrat und Ritterschaftshauptmann) was the owner of this estate My mother, Julie, was not only of the same family, but a first cousin of my father, since they were the children of two brothers This marriage was blessed with ten children We children do not provide any support for the opinion now frequently asserted, especially in Paris, that the children of close relatives are frequently physically and mentally weak, and suffer particularly from deaf-mutism None of us has lacked the gift of speech, nor have we been affected by hearing difficulties in youth or old age Neither have any other mental or physical defects made their appearance Three did

die at early ages, but from ordinary children's diseases, and the death of three-tenths before the age of puberty is not unfavorable. The survivors have in general enjoyed good health. My oldest sister died at the age of 76, and the three children that are still alive intend to live at least as long.

Despite the fact that I was born on the Piep estate, my earliest memories relate rather to another manor, Lassila in Wierland, where I first became conscious of the world around me.

The owner of this manor, an elder brother of my father, named Karl, had been married for a long time with a Baroness Kaune from Koburg, but their marriage had remained childless. But as conjugal blessings had begun to pour forth so copiously over my father's house, and a cessation was not in sight for a long time, and as both my uncle and my aunt enjoyed the liveliness of children, the latter proposed to my father to share the children with him. As a result of this agreement, I, immediately after being weaned, together with a somewhat older brother, Friedrich, was sent to Lassila, where we were to be raised as children of the house. My brother died very soon after our removal, so that I know of him only through tradition. In consequence, I was tended even more carefully by my good-natured, very kind aunt, who was so *fond of children* that every child's face made her happy and a joyful one could move her to tears of joy. Thus she took great delight in my vivacity, and as far as possible shielded my mischievousness. I must have felt this, for I still remember that in her presence I always became more talkative. My uncle was a more serious person, to him my talkativeness appeared at times to be excessive, and he frightened me by saying that if I prattled so much I would wear out my lips, so that afterwards I would be unable to cover my teeth. This gave me my first worry in life, but as I closely observed all strangers who came to the house to see whether their lips were worn down and found none, I soon arrived at the opinion that the danger could not be so great. Besides, my uncle's basic principle of education was that children must "obey." According to tradition this principle was formerly practiced more vigorously in these parts, and education was judged by the chastisement that was meted out. Whether the principles of Jean Jacques Rousseau had had some influence among us I cannot judge, but a marked change in educational methods appears to have taken place. In addition, my uncle had his own special reasons for not frightening me. He had considerable mechanical skill, and not only drew and painted very nicely in water-colors, but during the winter also performed all kinds of rough mechanical labors. A glazier was not permitted to appear on the estate, because without exception he performed all this work himself. He also liked to do carpentry. I recall that he once made a pair of elegant shoes for his wife, and on another occasion painted a shawl, whose border showed a palm-tree in a tropical landscape which excited my imagination. While he was performing these tasks, especially the mechanical ones, he liked to have me present to perform small services for him. Once when I was five or six years old, a plane cut

deeply into the little finger of my right hand The scar left by this wound still remains as a sign that my rough edges have been removed and that I should not be included among unpolished folk

1785 — 1852

DANIEL DRAKE

On the frontier, during pioneer days, skilled medical attention was too often considered a luxury Only the larger settlements attracted competent practitioners The number of these was small, but they left an indelible impression on the life of the West which transcended their numbers

By far the most important of these men was Daniel Drake of Cincinnati Born in New Jersey, he moved with his family to Kentucky at an early age Drake described these youthful days in a delightful series of letters to his children (These were published in 1870 by his son Charles D Drake under the title *Pioneer Life in Kentucky A Series of Reminiscent Letters from Daniel Drake, M D, of Cincinnati to his children*)

In 1800 he went to Cincinnati, where he was apprenticed to Dr William Goforth for a period of four years Drake completed his medical education and received his degree at the University of Pennsylvania in 1816 Thenceforth, he embarked on a career of vigorous activity in medicine, education, and literature In 1814 he helped to organize the Lancasterian Seminary in Cincinnati Later this institution became the Cincinnati College, and Drake organized the medical faculty He was also a member of the medical faculty of Transylvania University at Lexington, the first medical school established in the West He organized several other medical schools, a public library, and a literary society, assembled a remarkable private museum of natural science, and wrote numerous pamphlets, books and addresses His *Picture of Cincinnati* (1815) was a considerable success, and was often quoted by early travelers Drake's most important work, however, is his invaluable treatise on the *Diseases of the Interior Valley of North America* In the opinion of Otto Juettner, his biographer, "If he had done nothing more than to leave his monumental work on the 'Topography, Geography, Meteorology, Climate, and Diseases of the Interior Valley of North America,' he would still rank with the greatest sons of the West."

AFTER the marriage of my parents, about the year 1783, they went to housekeeping near my grandfather Drake's, on his land, where the town of Plainfield now is He owned a small grist mill on a branch of the Raritan river called Bound-brook, and my father's occupation was to "tend" it The first born of the family was a daughter, who was named Phebe, and died in infancy The next in order was myself, which in some countries, would have made me a miller

My birthday, as you know, was the 20th of October, 1785 I was named for one of my mother's brothers, and at the place of my birth spent the first

two and a half years of my life Of my character and conduct during that period tradition hath spoken rather sparingly, and whether in conduct Jo, Parkie, Charlie, Frank, or Austin is most closely modeled after me, will probably never be known with much certainty * But three things have been handed down with undeniable verity They, however, were so original as to show that, sooner or later, I should be a man of some distinction in the world You have, no doubt, heard them from me, but I wish to make them a matter of record 1st I was precocious, and that, too, in the feet rather than the head, for when I was in my eighth month I could waddle across the cabin floor, when held up and led on by one hand 2d When older and locomotive enough to totter over the door-sill and get out on the grass, as I was sitting there one day, a mad dog came along, and what do you think I did? Strangle him, as Hercules did the two big snakes which crawled so rashly into his cradle? No, more than that! I *looked* at the mad animal, and he thought it prudent to pass me by, and attack a small herd of cattle, several of which died from his bite! 3d As soon as I could run about I made for the mill, but whether from the instinct of the anserine tribe, or a leaning toward the trade of a miller, doth not appear, but whatever impulse prompted my visits, they were not without danger, and gave my mother, who had no servant, a great deal of trouble

My father and his brothers were not contented with their position, and thought of emigrating At that time *your* native state was the habitation of Indians, only, and Kentucky was but nine years older than myself

From the day of the landing of the little colony, composed of the three Drakes and Shotwell and Morris, the older and more intelligent men had been casting about for a tract of land, which they might purchase, and divide among themselves At length they fixed upon a "settlement and preemption," eight miles from Washington, on the Lexington road Hard-by the latter there was a salt spring, and the deer and buffalo were in the habit, as at other salt springs, of "licking" the surrounding earth This tract of fourteen hundred acres they purchased from a man by the name of May, and decided on calling their new home Mayslick—a decision sufficiently indicative of uncultivated taste (I must stop and mend my pen, during which you will have time to breathe, or wake up, as when an orator stops) The purchase being made, the next thing was to divide the tract, and give to each of the five a portion equal to his means of payment That of my father was thirty-eight acres, which I believe he afterward contrived to augment to fifty How he paid even for this small participation, I am unable to state, most likely, by selling his wagon and one of his horses Desiring to live so near each other that no house, in the event of being attacked by the Indians, would be unsupported by some other, they decided that every subdivision should have an angle or corner in the salt lick A brook crossed the road near to it, running from west to east, and the three brothers built on the north side of the little stream

* These names refer to his grandsons, then all children

This building now gave occupation to all who could wield an axe, for the colony was to winter here, and the autumn was upon them. As the distance was too great from Washington to permit their returning there in the evening to lodge, their practice was, after supping, to retire into the woods, and lodge separately among the cane, which flourished in great luxuriance beneath the parti-colored canopy of autumnal leaves. In this way they expected to elude the Indians.

No attack was made upon them either by night or day, and before winter set in their rude cabins, each with its port holes and a strong bar across the door, were completed. The roofs were of clapboards, and the floors of puncheons, for sawing was out of the questions. Another and, to nearly the whole colony, the last removal now took place. Kentucky was no longer a promise, but a possession—not an imagination, but a reality, they had ceased to be Jerseymen, and become Virginians, for at that time the daughter was still a member of her mother's house.

Now, fancy, to yourself a long cabin of the size and form of Dove's dining-room, one story high, without a window, with a door opening to the south, with a half-finished wooden chimney, with a roof on one side only, without any upper or lower floor, and fancy, still further, a man and two women stepping from sleeper to sleeper (poles laid down to support the floor, when he should find time to split the puncheons), with two children—a brother and sister—sitting on the ground between them, as joyous as you ever saw Frank and Nell, or as Dove has ever seen Charlie and Anna, or as Margaret will ever see Austin and Sue, and you will have the picture which constitutes *my first memory*. The mordant which gave permanence to the tints of this domestic scene was a sharp rebuke from my father, for making a sort of whooping, guttural noise (which is still ringing in my ears), for the amusement of my sister Lizzy, then I believe about a year old, while I was a little rising three. Thus, my first memory includes an act of discipline by my father, and well would it have been for many who have grown up unimpelled and uncontrolled by parental admonition, if they had been subjected in due time to a parental sway as firm and gentle as that which presided over my childhood.

Up to the time of my leaving home, at the age of fifteen, my mother never had a "hired girl," except in sickness, and father never purchased a slave, for two substantial reasons. *first*, he had not the means, and, *second*, he was so opposed to slavery that he would not have accepted the best negro in Kentucky, as a gift, provided he would have been compelled to keep him as a slave. Now and then he hired one, male or female, by the day, from some neighboring master (white hirelings being scarce), but he or mother never failed to give something to the slave in return for the service. In this destitution of domestic help, and with from three to six children, of which I was the oldest, you will readily perceive that she had urgent need, daily and nightly, of all the assistance I could give her. To this service, I suppose, I

was naturally well adapted, for I do not now recollect that it was ever repugnant to my feelings. At all events I acquiesced in it as a matter of duty—a thing of course, for what could she do, how get on, without my aid? I do not think, however, that I reasoned upon it like a moralist, but merely followed the promptings of those filial instincts of obedience, duty, and co-operation, which are among the elements of a system of moral philosophy.

Half past 9, P M

(When I had written the preceding pages I broke off for supper, and then attended a Friday evening devotional meeting of communicants of our church, from which I have but just returned, for after the exercises were finished I remained half an hour for conversation. By this meeting a new train of thought and feeling has been raised in my mind, and I can scarcely place myself on the spot we occupied when I parted with you.)

The readiness to join my mother in the daily performance of her various and often tiresome duties, of which I was speaking, had in it the less merit, inasmuch as there was little to attract me from them. In and around our cabin, from the door of which we looked into the woods on every side, there could not be much of evil companionship. How often we are virtuous merely because there are no present motives to vice. Nevertheless, in the main, as I can now recollect, I performed my labors *con amore*, always, however, all things being equal, preferring those of the field with father.

I have already spoken of grating and pounding corn, toting water from a distant spring, holding the calf by the ears at milking time, going to the pond on wash-days, and divers other labors with which mother was intimately connected. But my domestic occupations were far more extensive than these. To chop, split, and bring in wood, keep up the fire, pick up chips in the corn basket for kindlings in the morning, and for light through the long winter evenings when "taller" was too scarce to afford sufficient candles, and "fat" so necessary for cooking, that the boat-lamp, stuck into one of the logs of the cabin over the hearth, could not always be supplied, were regular labors. To bring water from the spring, which was but a short distance from the house, was another. To slop the cows, and, when wild, drive them with a stick while mother milked them, was another. Occasionally I assisted her in milking, but sister Lizzy was taught that accomplishment as early as possible, seeing that it was held by the whole neighborhood to be quite too "gaalish" for a boy to milk, and mother, quite as much as myself, would have been mortified, if any neighboring boy or man had caught me at it. In 1842, when I was sailing on the northern lakes in quest of information on the condition, customs and diseases of the Indians, a gentleman who had been much among them told me, that as he was once traveling a bridle path, he saw, some distance ahead, an Indian family about to meet him. The man had on his shoulders a heavy pack, and his wife was following him. They instantly stepped aside into the woods, and when they resumed the path,

the burden was on her shoulders. It is evident that he had some tenderness of heart, and while they were alone he was willing to relieve her, and she willing that he should do it, but neither could consent to his performing so feminine a labor in the sight of others. The rifle was his appropriate burden. Thus it is that from the bark wigwam to the log cabin, and thence to the palace, public opinion displays its fantastic tyrannies. By a strange inconsistency, while it proscribed milking by boys, it permitted churning, and if I had as many dollars as times I have lifted the "dasher," I might give up teaching, and devote the remainder of my days to writing nonsense for the amusement of my grandchildren. If I could have as many rational wishes gratified as I uttered wishes that the butter would come, I should have nothing more to wish for in this life. But, in truth, like pounding corn into meal in a hominy block, it was hard and monotonous employment, especially in the latter stages of the process, when the butter rises on the dasher.

Friday was mother's wash-day, and then, when the duties of the field were not urgent, I left it for the house. A long trough dug out of the trunk of a tree stood under the back eaves to catch rain-water for washing, and during times of drought, when a shower came up, all the washtubs, and buckets of the house were set out. Still it often happened that much had to be brought from the spring and broke with ashes. Mother's rule was to begin early and finish by noon. My additional duties were to keep up the fire, take care of the children, and assist in hanging out the clothes, which, for want of line, was often done on the fences. To bring them in at night, when they were generally frozen in winter, was still more my business. Scrubbing and scouring were generally done on Saturday, and to the former I often lent a helping hand. Till I went to Cincinnati to study medicine, I had never seen a scrubbing brush. We always used a split broom, in the manufacture of which I have worked many a rainy day and winter night. A small hickory sapling was the raw material. The "splits" were stripped up for eight or ten inches with a jackknife pressed by the right thumb, bent back, and held down with the left hand. When the heart was reached and the wood became too brittle to strip, it was cut or sawed off, and the splits turned forward and tied with a tow string made for the purpose on the spot. It only remained then to reduce the pole above to the size of a handle. A lighter and genteeler work was making "scrubs" for the buckeye bowls and the good old black walnut table (bless it!) with a crack in the middle, from end to end, occasioned by the shrinking of the boards. The "scrub" was a short handbroom made precisely like the scrubbing broom, but out of a small sapling. If I were not afraid you would think me boastful, I would say that when twelve years old I was decidedly dexterous in the manufacture and use of both, though I generally had rather a poor "Barlow" knife—price eighteen pence—with which to execute the former. Peace to thy name, good Mr. Barlow! Thy ingenuity used to excite my wonder. Thou wert present with me in many

a useful labor, and while at work in thy shop in London, thou wert my companion in many a romantic ramble through the woods beneath which *Absalom* * rolled his spring water over the limestone rocks

1822 — 1902

ADOLF KUSSMAUL

"I consider myself fortunate to have gone through life as a child of this century, since to no other of the innumerable centuries that have passed into the limbo of time has the gratitude of mankind been more obligatory." With these words, Adolf Kussmaul introduces the reader to an exceptionally fine autobiographical account of the early life of a prominent clinician and medical teacher of the nineteenth century. Kussmaul was born in 1822 at Graben, near Karlsruhe, Germany. His grandfather had been a military barber-surgeon, his father was a physician, and following in their footsteps, he also entered upon the study of medicine.

Kussmaul received his medical education at Heidelberg (see page 84), and then settled down as a country practitioner. Serious illness, however, compelled him to abandon medical practice (see page 340), and led him to prepare for an academic career. He taught at Heidelberg from 1855 to 1859, when he accepted the chair of internal medicine at Erlangen. In 1863 he accepted a similar position at Freiburg. Kussmaul was instrumental in initiating a new scientific movement that was to become of great importance in the development of clinical medicine. This was the idea of functional diagnosis, according to which information regarding the early stage of an affection of an organ could be obtained by testing its functions. For instance, the behavior of the stomach could be studied by introducing a test meal. After a certain interval, the stomach is emptied and the contents examined.

In 1876 Kussmaul became professor at Strassburg, where he remained until his retirement in 1888. The rest of his life until his death in 1902, was spent in Heidelberg. Such time as he could spare, he devoted to his autobiography, *Jugenderinnerungen eines alten Arztes* (*Reminiscences of the Youth of an Old Doctor*) and the unfinished sequel *Aus meiner Dozentenzeit in Heidelberg* (*A Teacher in Heidelberg*). From the former we have selected the account of the earliest incidents of which Kussmaul seems to have been aware. Attention may be called in this selection to religious experience in childhood, for it leads to an interesting comparison of Kussmaul's story with the reflections (in the following selection) of Oliver Wendell Holmes on religion and childhood in his own life.

MY FIRST recollection takes me back to our kitchen. Dressed in a little coat, I collide with our cook, who, having just lifted a pot of boiling water from the stove, loses her balance, spills it and scalds my head. I scream without stopping, my mother frightened to death, comes running and clasps me in her arms.

* *Absalom* is a small creek.

In my second remembrance I am lying in bed. My father who has returned from his practice, bends over my head and inspects the damage.

Everything else that must have followed the scalding, I have forgotten, only these two moments remain indelibly illuminated. As an objective sign I retained a scarred depression on the crown of my head, which was later covered by the hair surrounding its edges.

A later memory, presumably from my fifth year, presents a problem to the solution of which devotees of psychology may devote their leisure hours.

The psychological motivations underlying the speech and actions of children are usually obvious, nevertheless there are exceptions where they remain obscure. Although in general I am easy to manage, yet when I had to learn my first prayers, I exhibited an incomprehensible stubbornness. My mother had taught me two well-known short prayers, grace at table "Come Lord Jesus be our guest," etc. and the evening prayer in bed "I am small, pure is my heart," etc. I said grace without any mistakes, but my evening prayer I began regularly with the appellation "Little boy!" I would pray "Little boy, I am small," no matter how sternly my mother reproved and punished me. I refused to give up my little boy, as soon as I had to say my evening prayer I saw him before me. He had about the same build and was about the same size as I. He looked about the same each time, and listened attentively to me like a good playmate. Without a doubt he was interested in my gratifying report that I was small and pure of heart. Friends with whom I discussed the problem thought the little boy had been my conception of the Christ child, since in saying grace I had also directed my prayer to Jesus, but this hypothesis is incorrect. For me the Lord Jesus was not a little boy, but instead a friendly man with a chalice in His hand exactly like the picture that hung on the wall, and quite different from the Christ child, which was just as certainly not a little boy but rather a little girl, since shortly before Christmas she had come into my room clothed in a dress and a veil and bearing a wand. In a pleasant voice she had exhorted me to be obedient and had presented me with apples and gilded nuts. To my great annoyance I have not yet succeeded in arriving at any definite solution of this puzzle. One thing is certain, however, the little boy was the product of a vivid imagination.

1809 — 1894

OLIVER WENDELL HOLMES

According to Henry Adams, "Only Bostonians can understand Bostonians and thoroughly sympathize with the inconsequences of the Boston mind." Despite this alleged ancestral handicap, however, Oliver Wendell Holmes did manage to achieve eminence in medicine and literature. Born in Cambridge in 1809, he received his education at the Phillips Academy at Andover, and then at Harvard.

College from which he graduated in 1829. After a year spent in studying the law, he entered Harvard Medical School in 1830. Three years at this institution were followed by two years of study abroad. This was the period when American students were attracted to Paris, the Mecca of the medical world. After returning to the United States in 1835, he received his medical degree from Harvard in 1836 and began to practice in Boston.

Although Holmes never acquired a large practice, he received professional recognition by being elected one of the physicians to the Massachusetts General Hospital, and in 1847 by appointment as professor of anatomy and physiology in the Harvard Medical School. He taught these subjects until 1882, and 1871 respectively. His most lasting contribution to medicine is his essay on *The Contagiousness of Puerperal Fever*, published in 1843, which in the words of William Osler, "probably saved many more lives than any individual gynecologist."

At the same time Holmes pursued his literary career, which had begun while he was still an undergraduate at Harvard. One of his best-known poems is "Old Ironsides," written in 1830. His first volume of collected poems appeared in 1836. Other works contributing to his literary fame are the *Autocrat of the Breakfast Table*, and his novels, notable for their psychological insight, of which *Elsie Venner* is probably the best known.

As the son of a New England minister, the Rev. Abiel Holmes, it is perhaps not surprising to find Holmes, even in childhood, occupied with problems of theology. He later sloughed off the darker aspects of Calvinist theology, and expressed his position in the comment that "Love is the master key that opens the gates of happiness, of hatred, of jealousy, and, most easily of all, the gate of fear."

EARLY PERIOD When the chick first emerges from the shell, the Creator's studio in which he was organized and shaped, it is a very little world with which he finds himself in relation. First the nest, then the hen-coop, by and by the barnyard with occasional predatory incursions into the neighbor's garden—and his little universe has reached its boundaries. Just so with my experience of atmospheric existence. The low room of the old house—the little patch called the front yard—somewhat larger than the Turkish rug beneath my rocking-chair—the back yard with its wood-house, its carriage house, its barn, and, let me not forget, its pig-sty. These were the world of my earliest experiences. But from the western window of the room where I was born I could see the vast expanse of the Common, with the far-away 'Washington Elm' as its central figure—the immeasurably distant hills of the horizon, and the infinite of space in which these gigantic figures were projected—all these, in unworded impressions—vague pictures swimming by each other as the eyes rolled without aim—threw the lights and shadows which floated by them. From this centre I felt my way into the creation beyond.

Boyhood My boyhood had a number of real sensations. An inspiring scene, which I witnessed many times in my early years, was the imposing triumphal entry of the Governor attended by a light horse troop and a band of sturdy truckmen, on Commencement Day. Vague recollections of a 'muster,' in which the 'pomp and circumstance of glorious war' were repre-

sented to my young imagination But my most vivid recollections are associated not with war, but with peace My earliest memory goes back to the Declaration of Peace, signalized to me by the illumination of the Colleges in 1815 I remember well coming from the Dame school, throwing up my 'jocky,' as the other boys did, and shouting 'Hooraw for Ameriky,' looking at the blazing College windows, and revelling in the thought that I had permission to sit up as long as I wanted to I lasted until eight o'clock, and then struck my colors, and was conveyed by my guardian and handmaidens from the brilliant spectacle to darkness and slumber

Like all children, I began to speculate on the problems of existence at an early age I remember thinking of myself as afloat—like a balloonist—in the atmosphere of life I had come there I knew not how, but I knew I had got to come down sooner or later, and the thought was not welcome to one who enjoyed the present with all the keenness of lively boyhood As for the government of the universe to which I belonged, my thoughts were very confused The Deity was to me an Old Man, as represented in some of the pictures I had seen Angels and Demons were his subjects, and fellow-inhabitants with myself in the planet on which I lived A most striking example of my notions of the supernatural might be seen in the way in which I conceived of the two great painters, Michael Angelo and Raphael Their names, which I had heard of as belonging to supernatural beings, of course suggested the idea that these human creatures were exceptional natures, though commonly considered as men A story I heard of unmarried maternity completely confounded my teachings as to the birth of the Son of Man I was not without apprehensions of the dangerous presence of malignant spirits The bare spots known as the 'Devil's Footsteps,' one of which was near Mt Auburn, another in a field very near our own, were objects of serious contemplation in my childish thoughts, and even the irregular breach in one of the College buildings through which the Evil One was said to have made his exit from a circle of profane youths, who had raised him in their unhallowed orgies, was, to me, full of ominous and appalling suggestions The garret, by the door of which I sometimes passed, but whose depths I never explored until later in life, was full of unshaped terrors There was an out-house where old and broken furniture had been stored, which I shunned as if it were peopled with living bipeds and quadrupeds in the place of old chairs and tables My theology was to the last degree vague If I might say it without irreverence The Deity was to me the Jewish *Jehovah—Jahveh*—tamed from his barbarous characteristics into a civilized kind of Deity

Two spectres haunted my earliest years, the dread of midnight visitors, and the visits of the doctor I hardly know when I was not subject to fears when I was left alone in the dark These terrors were vague, and different at different times I could not say that I believed in ghosts, nor yet that I disbelieved in their existence, but the strange sounds at night, the creaking of the boards, the howling of winds, the footfall of animals, voices heard from

a distance and unaccounted for,—all such things kept me awake, restless, and full of strange apprehensions. These fears lasted until, on the approach of adolescence, I became greatly ashamed of them. I do not say that I have got rid of these feelings, and to this day I sometimes fear a solitary house, which I would not sleep alone in for the fee simple of the whole deserted farm. I cannot describe the amount of worry I have had from this source. Perhaps the stories I heard from the country-bred inmates of our kitchen kept this feeling alive. I can remember being told by one of the bucolic youths, with the most serious air, that the Evil One was wandering around every night, and that if one wrote his name in his own blood, and left it, the prowling agent of Satan, if not Satan himself, would pocket it, if there were pockets in his asbestos suit, and the writer would from that day forth become his servant and slave.

The other source of distress was, as I have said, the visits of the physician. The dispenser of drugs that embittered my boyhood was Dr. William Gamage. He was an old man, associated principally in my mind with two vegetable products, namely the useful though not comforting rhubarb and the revolting and ever to be execrated ipecacuanha. The dread of the last of these two drugs was one of chronic miseries. He designated it by a monosyllable, the sound alone of which is almost equal to—! Such causes of unhappiness as those I have mentioned may seem trivial to persons of less sensibility than myself, but they were serious drawbacks to the pleasures of existence, and, added to the torture of toothdrawing, made a considerable sum of wretchedness.

The process of extricating ourselves from those early influences which we are bound to outgrow is a very slow and difficult one. It is illustrated by the phenomena of waste and repair in the physical system.

It is fortunate for our civilization that our early impressions are got rid of with such difficulty. The conservative principle is always (except at brief intervals) largely in excess of the destructive and renewing tendencies which go hand in hand with the task of improving society. The process taken into the system preys upon its effete material, which is carried out by exhalation and secretion, at the same time that it adds the vivifying element to the forming tissues. New ideas act upon society as oxygen does on the body, attacking its errors, which pass away from the lists of human beliefs, and strengthening the new truth which is building in its place. Born near the beginning of the century, my mind was early impregnated with beliefs which, in the minds of those whom I consider the best thinkers of the present, are utterly extinct, and replaced by newer thought. The change in my own mind, like those of many others born in similar circumstances, has been gradual, and to a large extent insensible.

It was a New England doctrine that a child must repent of, and be punished for, not only his own sins but those of his first parent. This was the foundation of the condemnation of unborn and unbaptized children, as taught in the *Day of Doom*, the celebrated and most

popular poem of Michael Wigglesworth, the minister of Malden (?) The doctrine of inherited guilt, held up to scorn in the fable of the 'Wolf and the Lamb,' was accepted by the church as in perfect harmony with the human reason and the divine character. This doctrine of the fallen race was incorporated into the food of the New England child as truly as the Indian corn, on which he was fed, entered into the composition of his bones and muscles. During his early years, if he was possessed of an active intelligence he struggled against this doctrine contrary to all the instinctive convictions which belonged to his nature, and which were embodied in the old fable referred to. The doctrine of the Fall of Man, and all connected with it, was not only wrought into the intellectual constitution of a New England child, coloring his existence as madder stains the bones of animals whose food contains it, but it entered into his whole conception of the universe. The early years of a thinking child, who was not subjugated by this doctrine, and those allied with it, were spent in conflict enforced by the threat of eternal punishment.

What is to become of the reason of a child taught to repeat, and believe that he believes, the monstrous absurdity which he reads in the lines of the *New England Primer*,

'In Adam's fall
We sinned all'

Doctrines like that, introduced into the machinery of a young intelligence, break the springs, poison the fountains, dwarf the development, ruin the harmony, disorganize the normal mechanism of the thinking powers.

1 8 4 3 — 1 9 2 6

OTTO HEUBNER

To a generation accustomed to infant welfare centers, emphasis on child psychology, and the study of childhood behavior, there is surely a peculiar fitness in the presentation by a pediatrician of his own childhood. Characteristically, Otto Heubner's retrospective description of his early years is that of a "baby doctor", the accent is on growth, feeding, behavior.

Interestingly, Heubner's attention was directed at first to internal medicine. His course in neuropathology at Leipzig attracted William H. Welch, but when Welch arrived in the Saxon city he found that Heubner had shifted his interest to the diseases of children. This shift occurred after 1876 when Heubner was put in charge of the district outpatient clinic connected with University of Leipzig, where he occupied the post of associate professor. Here, and later in Berlin, he made fundamental contributions to the specialty of pediatrics, he was the first to calculate infant diets on the basis of their caloric values. The following selection is from Otto Heubner's *Lebenschronik* (*Chronicle of My Life*), published by his oldest son Wolfgang Heubner in 1927.

I AM the fruit of a most tender, youthful conjugal love. My mother had just become 18 when her first-born made his appearance on January 21, 1843, in the small city of Muhltroff. My father was 31 years old. He was a slim, handsome man, with a delicate physique which he had strengthened by exercise. Mother was pretty and healthy, but very small. While father was tall, 177.5 cm, mother measured only 150.4 cm in height. I took after her, my mother later maintained that I had the stature of my maternal great-grandfather, the legal revenue-officer, Wehner. According to my father's notes, even in earliest childhood I was not a pretty child, only large fiery eyes in a round face aroused some interest.

Thus it happened that personality, the Goethean "greatest fortune of mortal man" was denied to me throughout my life. It was not given to me to impress or even only to interest anyone simply by my appearance. Whenever I succeeded in obtaining esteem, goodwill, and very often also sincere affection, it was always necessary for me to exert a slow, gradual influence on my environment.

It is perhaps biologically not uninteresting that my fate as regards shortness was not already decided in infancy. On the contrary, during the first years of life I appear to have had an average body-length. At the end of the fifth month I measured 63.6 cm in length, at the end of the seventh month 68.4, and at the beginning of my fourth year 88 cm, so that my father felt justified in predicting for me a height of about 175 cm. To be sure, in comparison with the children measured by Camerer, who attained a height of about 176 cm, these figures are decidedly inferior. I, however, attained only a height of 161 cm. The retardation (of my growth), however, occurred during the growth period of later childhood. For at the beginning of the fifties, in a letter to a lady friend my mother already mentions my smallness.

Of my first childhood years, I myself have no recollection. My account of my early development is based entirely on notes in my father's diary. I was nursed by my mother, but from the third month on, I received in addition some mush. From the second month on I began to notice my environment, produced my first babbling efforts and laughed heartily. At the end of the fourth month I received a "little dress and cap" and made the first attempts to grasp things, in the sixth month I was able to sit and to stand, in the eighth month I understood questions, in the ninth I learned to creep, at eleven months I was able to perform the usual baby tricks ("How big is the baby?" etc.), at the end of the first year I walked along the wall, but could take only a few steps without support, and at fifteen months of age I repeated many words. The nature of the child was merry, active, robust, and in the second half of the second year showed signs of humor. The latter trait showed itself particularly in a waggish phantasy. I loved to imagine myself in the place of father or mother and to speak of myself as of a third person, for instance, in the evening before going to bed, I would call "Is the boy already there?",

"Now, creep right into your bed, you darling boy!" and similar things

At the beginning of my fourth year, my father during a walk undertook to test my courage by leaving me all alone in the woods. The result of this test was not particularly brilliant. Somewhat later, on the occasion of the annual Freiberg fair, it happened that my sister, who was about three years old, and I were playing in the street in front of the house, and that without any reflection or scruples we took a wagon and pony from one of the nearby stalls and went for a ride, and we were the children of the chief magistrate of the city! After that there was a rigorous investigation. Finally father asked me "What are you when you take such a thing from strange people without paying for it?" I replied "A murderer." As I had immediately admitted everything, I was let off with a strict reprimand. My little sister, however, who had tried to deny it, did not get off so easily.

1845 — 1933

RICHARD DEWEY

Richard Dewey, one of the most distinguished American psychiatrists of his time, was born in 1845 at Forestville, Chautauqua County, New York. His early years, spent in the quiet peaceful atmosphere of a small New York village, are charmingly presented in Dr. Dewey's unfinished autobiography, which despite this circumstance manages to cover many of the events of a fascinatingly varied and busy life.

His major contribution to psychiatry was made in 1879 upon the assumption of his duties as the first superintendent of the new state hospital at Kankakee, Illinois. Here he introduced the so-called "cottage plan," whereby mentally ill patients were no longer indiscriminately herded together, but were separated into small groups and housed in separate buildings. This facilitated treatment, and secured for the patients many of the advantages of community life.

In 1893, Dewey was forced to leave the superintendency of Kankakee hospital in one of the most notorious incidents in the history of partisan politics in state hospitals. He was compelled to resign because he did not belong to the incoming victorious political party. Two years later, however, he became medical director of the Milwaukee Sanitarium at Wanwatosa, Wisconsin, of which he remained the guiding spirit for twenty-five years. New methods were instituted, and a standard of sanitarium therapy was created which made Wanwatosa a model institution.

Among Dr. Dewey's literary activities may be mentioned his collaboration with five other American and Canadian psychiatrists in the writing of the monumental four-volume history, *The Institutional Care of the Insane in the United States and Canada*, which was published in 1916-17, and his editorship from 1894 to 1897 of the *American Journal of Insanity* (now the *American Journal of Psychiatry*).

I WAS born on December 6, 1845, at Forestville, Chautauqua County, New York, a son of the village blacksmith and gristmill-owner, Elijah Dewey,

whose father, Elijah Dewey, Sr., had fought in the Revolutionary War. We were descended from Thomas Dewey, of Sandwich, Kent, England, who landed in 1633 at Dorchester, Massachusetts. My mother was Sophia Smith, daughter of Richard Smith (born in Danby, Vermont, in 1780), who settled in Hamburg, Erie County, New York. He was a justice of the peace and member of the New York State Assembly in 1816 and 1817.

Chautauque County is the westernmost county of the Empire State, and is famed for the altitude of Chautauque Lake, thirteen hundred feet above sea-level, "opening an eye to heaven", and also for the Chautauque Institute, founded by Bishop Vincent, a nation-wide influence in popular and religious education, the "alma mater" of many Chautauque circles throughout the nation. Near at hand are the Great Lakes, Erie and Ontario, and Niagara River connecting them, with the stupendous cataract between. These wonders are famous, but Chautauque's little village of Forestville has never drawn attention from the outside world. It was and is a village of a few hundred souls, five miles from Lake Erie, which grew up on the banks of Walnut Creek, the creek being named no doubt from the great black-walnut tree that overshadowed its banks at that point. The story of the great tree will come later in my narrative, I must here recount an escape from drowning that occurred in my third year, the earliest event in my remembrance. That escape, and the others of my eighty-five years, make possible this adding of one more to the autobiographies of the day, it is the earliest picture that impressed me, and remains vivid today. An older brother, Henry, was sitting by the cistern feeding chickens. I sat down beside him and, when told to look out lest I fall in, said that I "guessed" I could sit there as well as he. Hardly had this boastful utterance been delivered when I toppled over. A shout from one or both of us called the "hired girl," Maria Doolittle, who happened to be near. She was a paragon of faithfulness and presence of mind, I see her as plainly today as I did then, reaching for me, grasping my gingham dress, and lifting me out all dripping before I had time to realize my danger.

Our home was in the strict Puritan tradition. Family prayers, grace at table, seven Bible verses must be learned every Saturday for Sunday school, the shorter catechism and the Ten Commandments must be memorized. A gentle but earnest mother so winningly urged these tasks that the irksomeness was scarcely felt. The books in the house were few—*History of the Reformation*, Baxter's *Saints' Rest*, *Pilgrim's Progress*, Barnes's *Notes on the New Testament*. When I was seven, *Uncle Tom's Cabin* came into the house, the first fiction I had known. *The Arabian Nights*, and *Robinson Crusoe* came in due time, though there was a serious question regarding the *Thousand and One Nights*. About this time my older brother began to read Robert Bunker's *New York Ledger* and the so-called "blood-and-thunder" serials. My curiosity was piqued by these highly seasoned tales, which brought the world of crime and violence for the first time to my mind. On dark nights

I now hurried home, imagining points of ambush beset with kidnapers and robbers

At this time there came to the family circle a granduncle who had experiences to relate on two strikingly attractive subjects the Revolutionary War and spiritualism During the war, Granduncle Gray, as a boy of thirteen, had been ordered to sentinel duty on a wooded border At night, alone, he shouldered his musket and patrolled his beat What sounded like a heavy tread and then a loud report startled the young sentinel out of ability to control his cowardly legs He fled, ostensibly to report the incursion of the enemy, and returning with reinforcements, he discovered that a calf had likewise been patrolling the wood Granduncle Gray had attended seances, then first known through the Fox Sisters, who had developed revelations of spirit life by means of "spirit rappings" A son of his, a New York homeopathic physician, famous and successful in his day, had lost a beloved wife, and hoped for a message from the "spirit land" Seances had been held in his house, at which my granduncle told of having seen musical instruments floating in the air, giving out music, of having heard bells rung by invisible means He aroused our open-mouthed wonder

1801 — 1858

JOHANNES MULLER

Of Johannes Muller it has been said, that German medicine during the latter half of the nineteenth century bears the "stamp of his method" This distinguished teacher and eminent scientist was born at Coblenz in 1801 as the son of a cobbler After a brilliant career at school, he studied medicine at Bonn Muller then spent some time in Berlin where he came under the influence of the physiologist Rudolphi, by whom he was decisively influenced in his further development In 1830 Muller became professor at Bonn, and three years later Rudolphi's successor at Berlin Here he taught anatomy, physiology and pathology, and held the professorship until his death in 1858

Muller worked with unique success as a scientific investigator and teacher His researches dealt not only with physiology, but also with gross anatomy, histology, embryology, comparative and pathological anatomy Among his contributions one finds "researches on the ovaries of insects alongside comparative investigations of the visual sense in man and animals" His studies on tumors (1838) prepared the way for the development of pathological histology by his student Rudolf Virchow During his later years, Muller applied himself chiefly to comparative anatomy and problems of animal evolution His objective attitude, and his use of exact experimental methods based on physics and chemistry exerted an extremely stimulating influence on his students Among these were many of the medical leaders of the next generation Schwann, Henle, Virchow, Helmholtz, du Bois-Reymond, Brucke, Traube, Remak and Kolliker

Some of Muller's earliest investigations were on subjective sense-perceptions Through these studies Muller laid the foundations of experimental sense-physiol-

ogy, which has been so diligently studied in more recent years. One of these works, *Ueber die phantastischen Gesichtserscheinungen* (*On Phantastic Visual Phenomena*), a small book published in 1826, informs us that his interest in this subject goes back to his early years. In this book Muller relates the following experience:

THE plasticity of the imagination in relation to light and dark visual fields frequently intrigued me during my childhood. I recall one such experience most vividly. From the living room window of our house, I could see across the street a house of rather ancient appearance. In some places its plaster was deeply blackened, while in others it had peeled off in patches of many shapes, revealing an older and perhaps even the oldest coat of paint. At times, when I was not permitted to leave the house, I spent several hours a day at the window occupied with various things. After looking at the sooty, decayed wall of the neighboring house for a long time, I was successful in recognizing various faces in the outlines of the patches where the plaster had peeled off and where it remained. On repeating observation, these even assumed a talking expression. Thus, the neighboring house with its walls was for many hours the only specific thing in my visual field which recurred repeatedly, no wonder, then, that the form-creating imagination finally introduced some kind of life into this monotonous landscape. When I wanted to call to the attention of others how one was compelled to see all kinds of faces in the decayed plaster, no one wanted to acknowledge the correctness of my observations, yet I saw them quite clearly. This recognition which was refused to my imagination, at least, made me stubborn, my visions of faces became something mysterious for me, although in this connection it was only the imagination that I had in mind.

1852 — 1934

SANTIAGO RAMÓN Y CAJAL

In 1934, Ramon y Cajal, who may well be called the greatest neuro-anatomist of all time, died in Madrid at the age of 82. Born in Navarre in 1852, he had a stormy boyhood. But even in his early years he exhibited qualities which were later to come to fruition in his investigations of the central nervous system. Love of nature, artistic talent, and profound curiosity were eventually channeled into his medical and scientific work.

Cajal was introduced to the study of morphology by his father who was professor of anatomy at Saragossa, and he later studied medicine at this university. After graduating in 1873, he enlisted in the medical corps of the Spanish Army and saw service in Cuba. Returning to Spain in 1875, Cajal embarked upon an academic career. In 1883 he was appointed professor of anatomy at Valencia, and in 1892 he received the chair at Madrid, from which he retired in 1922.

Cajal's last years were passed in retirement, but he continued the work to

which he had devoted his entire life. A research institute, *Instituto Cajal*, was established by the Spanish government for him upon retirement, and here he continued to guide and inspire enthusiastic younger investigators.

The great achievement for which Cajal received the Nobel Prize in 1906 was his elucidation of the structure of the central nervous system in terms of nerve-cell units called neurones. This work was based on his improvement and development of methods for staining nervous tissue by metallic impregnation so as to render distinct the cellular elements composing it. His autobiography, *Recollections of My Life*, from which the account of his boyhood is taken is a valuable document for the history of science. But what is more, it reveals the character and personality of an unusual man and a great scientist.

ON ANOTHER occasion my craze for nests placed me in a very dangerous situation. I was anxious to examine an eagle's nest, so climbed with difficulty down a series of ledges on a tremendous cliff in the Sierra de Linás and looked from close at hand at the still naked eaglets, which stared at me with terror. I could not actually reach them, however. Fearing attack by the eagles, of which I thought that I could hear the screeches, I tried to escape from the projecting ledge where I was perched, but upon attempting the ascent I met with insurmountable difficulties. The shelf to which I had got down by a foolhardy jump projected from a lofty and almost smooth wall. There I remained for hours, caught as in a trap, consumed by terrible anxiety, with a burning sun overhead, and in danger of death from hunger and thirst, as there was no one to help me in these solitudes. Industrious use of the clasp-knife which I always carried saved me at last. Thanks to this implement and to the relative softness of the rock, I was able to enlarge some narrow cracks until they provided sufficient hold for my hands and feet and thus set me at liberty. How many such rash actions I could relate did I not fear to abuse the reader's patience!

Upon his return from the outlying villages, my father would inquire into the misdeeds and excesses of his sons and, rising in anger, would favor us with a formidable thrashing, besides reproaching my poor mother (a thing which distressed us greatly) for what he called her carelessness and excessive softness towards us.

The announcement of these paternal floggings, which, by a logical progression and in suitable adaptation to the hardening of our skins, began with a whip and ended with cudgels and tongs, inspired us with absolute terror, and so it happened upon one occasion that, to avoid this rather vigorous paternal caress, we ran away from home, thereby causing deep grief to our mother, who sought us anxiously throughout the town.

I remember that my brother and I, having played truant one afternoon and knowing that someone had told our severe progenitor, resolved to escape to the hills, where we remained for several days, pillaging the fields and living on fruit and roots, until one night, when we were already beginning to enjoy the wild life, our father, who was looking for us in every hiding-

place in the neighbouring woods, discovered us sleeping peacefully in a lime kiln. He shook us violently, bound us arm to arm, and led us in that shameful attitude back to the town, where we had to endure the jeers of the women and children in the streets.

As the reader will have gathered, beatings and thrashings were the usual conclusion of our escapades, but as a result of the process of adaptation already mentioned, the rods made us smart but did not correct us. While the bruises were fresh, we refrained successfully from backsliding, but once they had vanished we forgot our intentions of reformation. In fact, natural impulses, when they are very strong, may be modified somewhat, and often conceal themselves, but are never obliterated. Thwarted in our natural tastes, deprived of the pleasure of camping among the crags and ravines, there to exercise the artist's pencil, the warrior's arrow, or the naturalist's net, we sullenly attended school, without being corrected or made reliable. All that was accomplished was to change the scene of our misdeeds: the sketches of the countryside were replaced by caricatures of the master, the battles in the open air were changed to skirmishes among the benches, in which paper pellets, cabbage-stalks, haws, chick peas, and kidney beans served as projectiles, and, in default of paper for drawings, I made use of the wide margins of the catechism, which were filled with tasteless ornamentations, conceits, and puppets, some having reference to the pious text, others rather irreverent and profane.

In school, my caricatures, which passed from hand to hand, and my unsuppressible chatter with my fellows exasperated the master so much that more than once he had recourse, in the effort to daunt me, to locking me up in the classical dark chamber—a room almost underground, overrun with mice, of which the youngsters felt a superstitious terror, but which I regarded as an opportunity for recreation, since it provided me with the calm and concentration necessary for planning my escapades of the next day.

There, in the darkness of the school prison, with no other light than that which filtered faintly through the cracks of the rickety window shutter, it fell to my lot to make a tremendous discovery in physics, which, in my utter ignorance, I supposed entirely new. I refer to the *camera obscura*, wrongly ascribed to Porta, though its real discoverer was Leonardo da Vinci.

The curious fact which I observed was as follows. The little shuttered window of my prison faced the square, which was bathed in sunlight and full of people. Having nothing to do, I happened to look at the ceiling and noticed with surprise that a slender beam of light projected upon it, head downwards and in natural colors, the people and the beasts of burden which passed outside. I widened the hole and found that the figures became vague and nebulous, I reduced the size of the opening with paper moistened in saliva, and observed with satisfaction that, corresponding with the reduction, the clearness and detail of the figures increased. Thence I concluded that the rays of light, as a result of their absolute straightness, paint an image of their

source, whenever they are made to pass through a small hole. Naturally my theory lacked precision, ignorant as I was of the rudiments of optics. In any case, that simple and well-known experiment gave me a most exalted idea of physics, which I at once came to regard as the science of marvels. Of course I did not forget the wonders of the railway, of photography (recently invented at that time), of balloon ascent etc. And my enthusiasm did not deceive me, for to physics we owe the glories of European civilization. If the laws and applications of that science could be extracted from the heritage of human knowledge, the race would step back at one stride to the condition of the cave men.

For the time being, very far from appreciating the magnificent perspectives which the study of natural forces opens to the spirit, I proposed to profit by my unexpected discovery, and, mounted upon a chair, I amused myself by tracing on paper the bright and living images which appeared to console me, like a caress, in the solitude of my prison. "What does the loss of liberty matter to me?" I thought, "I am prevented from rambling about the square, but in compensation the square comes to visit me. All these luminous shades are a faithful reproduction of reality and better than it is, since they are harmless." From my cell I watched the games of the children, followed their quarrels, observed their gestures, and, in fact, enjoyed their play as if I were taking part in it.

Proud of my discovery, I became daily more attached to the realm of shadows. But I was so simple as to tell my comrades in confinement of my discovery, and they, laughing at my foolishness, assured me that the phenomenon was of no importance, since it was a natural thing and, as it were, a trick which the light plays when it enters dark rooms. How many interesting facts fail to be converted into fertile discoveries because their first observers regard them as natural and ordinary things, unworthy of thought and analysis! Oh that unlucky mental inertia, the lack of wonder of the ignorant! How it has delayed our acquaintance with the universe!

It is strange to see how the populace, which nourishes its imagination with tales of witches or saints, mysterious events and extraordinary occurrences, disdains the world around it as commonplace, monotonous and prosaic, without suspecting that at bottom it is all secret, mystery, and marvel.

1859 — 1939

HAVELOCK ELLIS

Physician, philosopher, and pioneer in the study of the psychology of sex, Havelock Ellis was born in 1859, the year of publication of Darwin's *Origin of Species*. He received a thorough education, with emphasis on French thought and literature. Much of his early life was spent at sea. A voyage to Australia, where he

nought school in New South Wales, prolonged itself into a four-year absence from home and broadened his outlook. It was while in Australia that Ellis resolved to study sex. Unlike most life-interests hit upon before twenty, this one stuck.

After returning to England, he studied medicine at St. Thomas's Hospital and became a qualified practitioner. He was much influenced by Goethe and Flaubert, Remy de Gourmont, and James Hinton, a nearly forgotten pioneer in sexual theory (see page 410). Ellis wrote scores of books, his most important work being the monumental *Studies in the Psychology of Sex*, which was first published on the Continent.

He was an early defender of woman suffrage and birth control. When Ellis struck out in the field of sex psychology, the word sex was taboo, but he lived to see many of the subjects of his earlier studies become topics of eminently respectable conversation. In appearance he was a second Bernard Shaw, without the twinkle. During his later years Ellis lived in seclusion, but he conducted a voluminous correspondence. He died in 1939 at the age of eighty.

MY EARLIEST recollection dates from the age of about two years, or perhaps earlier. We were moving into a new house—evidently the ugly little semi-detached villa now replaced by shops at the Addiscombe end of Cherry Orchard Road which is the earliest house I recall—and the nursemaid who was carrying me placed her burden for a moment on the kitchen dresser. The novelty of that lofty and unusual position furnished the first stimulus to perception strong enough to last permanently in memory. (Rather similarly, Ibsen's earliest memory was of being carried by his nurse to the top of a church tower.) There are other recollections that are faint, often trivial. I recall the little Chinese figure of a crouching monkey in soapstone which my mother would give me from off the mantelpiece, as later to her other infant children in succession, to play with in bed in the early morning. Somehow the feel of it seems as though it had moulded my fingers to sensation. I recall, for some unknown reason, when still a small child in a frock, running round and round the table till I was tired. I recall too, the eldest of my baby sisters who appeared when I was four. "Take away that piece of dirt and rubbish," I am said to have exclaimed with the jealousy of childhood. That feeling seems soon to have passed. I can only remember my baby sister as the object of my care and attention.

These memories are vague. The only definite memory of this time is of once accompanying the nurse who was wheeling the perambulator with the baby along Morland Road. The nurse stood still and I heard a mysterious sound as of a stream of water descending to the earth. I recall no feeling of interest or curiosity on my part, but the fact that I recall the incident at all seems to indicate that at that moment I was for the first time touched by the strange mystery of woman. It was not till years later that I felt any interest or curiosity in women or in any aspect of sex, however childish. For my mother I had always an equable and unquestioning affection, which seems to have been entirely free from any of those complications to which the child's

affection for his mother is now supposed to be liable, even though it may be in part true that it is out of such affection and on the model of such affection, that the youth's late sexual love of woman is moulded. There was no physical intimacy, her love for her children was not of the petting kind, and there were never any curiosities on my part, when these later arose they were turned in other directions. Nor was there ever any trace of jealousy on my part with regard to my father. That, indeed, may in any case have been excluded by the fact that he was such a stranger in his own house. We saw but little of him, and we always accepted him, as a matter of course and willingly, though there was little or no opportunity for warm affection to spring up, for even during his stays in London he had to be away all day at the ship or the office, and Sundays were too formal and sacred to be conducive to intimacy.

There was, I believe, nothing remarkable or precocious about my childhood, though I easily learned to read at the age of five. I was a fairly active child, and it was noted as a peculiarity of my gait, that in running I would take a little leap every few steps, the latent tendency to this movement seems to remain with me still. Perhaps the most characteristic incident in my early childhood, which impressed my mother, for she would refer to it in after years, occurred when I once stood stock-still in the middle of the road, for no obvious reason, and for some time could not be induced to move. I do not recall this manifestation, of instinctive obstinacy, but in it I clearly detect myself. It may well be to this grim silent persistence, deaf to persuasion, that I owe whatever little success I may have achieved in preserving intact my own individuality and carrying out my own projects, with indifference to the shifting attitudes of society or the law.

1865 — 1945

ALFRED E HOCHÉ

Fragmentary and elusive as autobiographical accounts of early years are bound to be, these recollections are of great interest, and often profoundly illuminate the psychological processes of the child's mind. According to Freud, "Illusions commend themselves to us because they save us pain and allow us to enjoy pleasure instead. We must therefore accept it without complaint when they sometimes collide with a bit of reality against which they are dashed to pieces." Alfred Hoche pictures this painful adjustment to stubborn reality simply and with an element of nostalgic melancholy. He learned that while man makes his own world, and needs his imagination to do so, there are inexorable limits which he cannot transcend.

Born the son of a Protestant clergyman, in 1865 at Wildenhain, in the province of Saxony, Hoche received his earliest academic instruction at the hands of his father. The study of medicine was begun in 1882 in Berlin, and continued in Heidelberg, where Hoche graduated in 1888. The most important formative influence during this period was W. H. Erb, the neurologist.

After a period as assistant in various clinics, Hoche was appointed in 1902 to the chair of psychiatry and neuropathology in Freiburg, where he remained throughout his active life as a teacher. Hoche's first interests were almost exclusively anatomical, and later were directed to the organic diseases of the nervous system. Throughout his career he remained a critical opponent of psychoanalysis.

I HAD several very secret wishes, but there seemed to be no way of realizing them, until one day at the dinnertable when I asserted my inability to eat carrots, my father settled the matter promptly with the dictum "Where there's a will, there's a way." This remark struck me like a bolt from the blue, now I saw the light, there would certainly be no lack of will on my part. During the quiet after-dinner hour, when I was left to myself, I set out to will vigorously. One of my wishes was to make men, like Jehovah. There was no lack of clay, so I prepared a fine lump and blew breath into it while willing continuously at the same time, but it did not stir. Perhaps it was too much to ask, because only God could have accomplished it, and so I passed on to my second wish.

We had an illustrated volume of Greek mythology. One of the illustrations showed a seated Polyphemus, naked and red, with struggling, writhing human beings between his fingers. The best thing about him, however, was the single, giant eye in the middle of his forehead. I, too, wanted such an eye, so assuming his pose I wished intensely, concentrating my attention on my forehead. But this too failed. However, there still remained my third wish, to fly. From dreams I knew how it felt. It was not simply a matter of hovering in the clouds, but a delightful soaring and gliding over wheat fields and meadows. I placed myself on all fours ready to resign myself to the elements as soon as my will would carry me aloft—but nothing happened. After this threefold failure I was richer because I had learned the limitations of volition, but on the other hand, this experience left me poorer because it taught me that pedagogical aphorisms are worthless.

Daily life was likewise full of shattered illusions. The promised snow did not come at Christmas, despite good weather. Promised outings were called off, a guest forgot to bring me a present, even though I hung around him while he packed to depart, hoping that he might still find it in the trunk. Urbach did not keep his promise that I would get a certain picture when I played the scales without a mistake. Uncle Edward invited us to a confectioner's shop for the first time in our lives to have ice-cream, but when we got there they had no ice-cream, so, instead we got a penny's worth of stale cake, which we had often seen in the show-case. One man, however, stands out against this dark background, for he was different from the others. This was the lawyer Robolski from Magdeburg. One time, while at our house on business, he met me, and, hearing that the annual fair was being held, gave me four good *groschen* (the silver Groschen was worth 12 Pfennig, while the good Groschen was worth 15). All kinds of possibilities now lay open to me—I

could spend the money on smoked fish, cakes baked in fat, or the carousel. It is only now, after sixty years, that I find an opportunity to thank him publicly. His name was always mentioned whenever I spoke of friendly influences on my life, but he will no longer be able to hear me.

These reflections concern my childhood. I have no desire to pursue any further the trail of my disappointments. These became rarer, the more I trained myself not to expect anything. Probably no one ceases completely to court illusion, nor does she ever deny herself completely to anyone. We learn how to associate with her more circumspectly, to enjoy her charm even when we don't believe her, just as in a passing love affair.

SCHOOL DAYS

In dreams, in study, and in ardent thought
Thus was he reared

Wordsworth

CHRISTOPH WILHELM HUFELAND

"The chief wonder of education," says Henry Adams, "is that it does not ruin everybody concerned in it, teachers and taught." That Adams's comment is an exaggeration few will deny, but that it contains more than a modicum of truth is likewise undeniable. Indeed, he might have cited Christoph Wilhelm Hufeland as one of his chief witnesses.

Hufeland is perhaps best known to the present day for his *Makrobiotik*, a popular treatise on the art of prolonging life, in which he was a forerunner of the new specialty of geriatrics. He was born in 1762 at Langensalza, the son of the physician to the ducal court at Weimar. The character of Hufeland's early schooling is described with sufficient clarity in the following selection from his autobiography. There seems to be little doubt that the regime to which he was subjected prepared him for the conservative, and even reactionary views which he later adopted.

Through the intervention of Goethe, whom he knew from Weimar, Hufeland in 1793 was appointed professor at Jena, where he remained till 1801. He then moved to Berlin where he became professor and physician to the Prussian court. In his younger years, Hufeland belonged for a brief period to the free-thinking Illuminati, but by 1798 his intellectual wild oats had been sown and he became a staunch pillar of church and state.

In medicine, Hufeland was an eclectic, who accepted no particular theory of disease as *the* theory, and was willing to try everything for the benefit of mankind. It was this attitude that led him in 1808 to espouse Mesmer's doctrine of animal magnetism. Generally, however, Hufeland kept clear of the mystical, speculative theories of romantic medicine such as prevailed in Germany in his day.

In 1831, when almost blind, Hufeland dictated his autobiography. It was not published, however, until 1863, when Alexander Goschen presented it to the public in the journal *Deutsche Klinik*.

AT FIRST I had a Master Senfting, a very merry fellow, who seems to have wanted to treat everything as if it were a game, he crept around on the floor with me, gave me pick-a-back rides, and so forth. I learned nothing, however, and as I later found out, his morals were not of the strictest, so that he was discharged after a year. Now I received another pedagogue of diametrically opposite nature, who stayed with me for ten years and who decisively influenced my whole life, not only as regards my studies, but also my character. He was a student of theology, named Restel, from Zurbig. He was already past thirty, and had been a tutor for six years, he was a serious, strict, gaunt, taciturn man with a hawk's nose, indeed, his face was completely Ciceronian (very similar to the bust of Cicero). He was a student of Ernesti in Leipzig, thoroughly grounded in philosophy and theology, and enlightened, insofar as this means freedom from all superstition and mysticism, but holding firmly to his Lutheran belief in the Bible and the principles of a traditional strict

education He addressed me in the third person, spoke little to me outside of school hours, friendly words or glances were rarities, and he never laughed Absolute obedience, prohibition of any contradiction, punctual attendance, learning by heart (especially Latin nouns), continual industry and activity, strict attention to punctuality and order, and severe reprimands, even physical punishment, for any infractions—these were the principles The day was divided as follows I rose at six, dressed, prepared for school, and at half-past eight had a piece of buttered bread or fruit From 9 to 12 I had lessons, this was followed by lunch, then until 3 I had recreation in the garden or the house From 3 to 5 I had school again, then a snack of fruit, or bread with salt or a little sugar, followed by a walk in the Webicht, in winter or when the weather was bad I occupied myself with some task Around 7 there was a frugal supper (some soup with bread, either with fruit or butter or jam or carrot juice) Then I spent some time with my brothers and sisters, and from 8 to 9 we joined my father, at which time I generally had to read something aloud, then back to my tutor's room, where I read and learned some more by heart Usually sleep overcame me so that I had to stand, but frequently I fell asleep even while standing Then to bed, where I had to fold my hands and recite the Lutheran evening prayer together with the Lord's prayer

This quiet, strict, monotonous pedantic training, living together with these serious men, had the most decided influence, not only on the instruction that I received, but on my entire education, on the bent of my mind, and on my character On the whole, I regard it as evidence of God's grace that he ordained it so, and no matter how burdensome and oppressive it may have been for me in the present, even in the next world I will thank my fine Restel for this severity and for every blow that he gave me For without this regimen certainly nothing good would have become of me, and at the very least I would not have become what I did I was headstrong and malicious, with a strong inclination to wilfulness, obstinacy, idleness, untidiness and sensuality It was no small task to get rid of these qualities, but it was accomplished successfully The wilfulness and stubbornness were broken by force Absolutely no contradiction or discussion was permitted, not even the question, *Why?* Instead of praise, which was not even introduced among us, I heard so often the remark "You are a stupid boy, nothing will ever become of you," that in the end I believed it myself, every trace of selfpride was eradicated so that in later life I did not have a particularly high opinion of myself For the rest of my life the qualities mentioned above were replaced by compliance, meekness, and gentleness, even when I was insulted, submission and obedience, first to the law and to duty, and secondly to the dispensations of fate, and even by renunciation, which the course of my life rendered necessary In a like manner, the earnestness and the taciturnity of my teacher, as well as the seclusion and solitude of my life brought about a good result, namely, that I had to learn at an early age to occupy myself and to live within myself, as I was denied

an external life This circumstance undoubtedly led to the awakening of that love for solitude, reflection and scientific occupation, which has remained with me throughout my entire life, and gave to it its direction

1785 — 1852

DANIEL DRAKE

A striking contrast to the schooling received by Hufeland is that described by Daniel Drake After moving to Kentucky, his family lived in poverty in a log cabin on the farm which Drake's father cultivated The schooling received by Drake was very meager The limited circumstances of life in a frontier community did not permit the luxury of a personal mentor, and most children learned the three R's in a one-room log schoolhouse As Drake indicates in his account, the settlers even when themselves uneducated were aware of the need for education and tried as soon as possible to establish schools The frontier settler of necessity was concerned with the elementary problems of living, but he was also a seeker after the good and abundant life

FATHER and his neighbors were not indifferent to the education of their children, but they were all new settlers, all poor, and all illiterate, and hence had not the means or conception necessary to the establishment of a good school, even had it been possible to procure a competent teacher In a year or two after our removal a small log schoolhouse was erected by the joint labor of several neighbors, about half a mile north from his house, and just beyond the "line" of his "place" It was entirely in the woods, but one of the wagon roads leading into the Lick passed by its very door In the winter, light was admitted through oiled paper by long openings between the logs, for at that time glass was not thought of It was one story high, without any upper floor, and about sixteen by twenty feet in dimensions, with a great wooden chimney, a broad puncheon floor, and a door of the same material, with its latch and string I give you these details, because they are equally descriptive of the common run of schoolhouses at that time I never heard a reason assigned for placing them generally by the road side, but the travel was not great, and such was the insulation of families, that I fancy the children were, by common consent and mere social instinct, placed under circumstances to see all that could be seen, and, perhaps, as they occasionally saw new aspects of things and persons, it was the best plan In the year 1836, a little more than forty years after this schoolhouse was built, I took you and your sister to the spot We found a plowed field and no fragment of my first sylvan academy

The first teacher who wielded the hickory mace in this academy was Jacob Beaden You will think his name in true harmony with the house He was a recent immigrant from the eastern shore of Maryland, and an ample exponent of the state of society in that benighted region His function was to

teach spelling, reading, writing, and cyphering as far as the rule of three, beyond which he could not go, and his attainments in that branch harmonized, as to quality and compass, with his erudition in the others. The fashion was for the whole school to learn and say their lessons aloud, and a noisier display of emulation has perhaps never since been made. This fashion was in those days common to all our schools, and although, at first view, it may seem absurd and at variance with all improvement, something may be said on the other side. Silent study is solitary, but audible may be made social. This was much the case in Master Beaden's school. Two or more boys would get and say their spelling lessons together, and so of their reading lessons. The spelling book was Dilworth's, an old English production, which I would like to get hold of once more. The reading book was the New Testament, in which we read verse about. When the time for "letting-out" was at hand, the whole school were called up to spell, and then came the strife of glory—the turning down and going up head. When the dismissal was pronounced came the scramble for wool hats of all ages, sun bonnets, without pasteboard, of all materials, and dinner baskets of home manufacture, and as the rush through the door was effected, the dispersion was invariably in a run with hopping, jumping, and hallooming.

1813 — 1883

J. MARION SIMS

Until very recently the influence of European medicine has been an important, and often determining element in American medical history. But even while under the tutelage of the Old World, America was able to bestow on suffering mankind several gifts of inestimable value. The greatest of these is undoubtedly surgical anesthesia, but almost as significant was the contribution of a man who revolutionized gynecological surgery—J. Marion Sims.

Born in a back-country village of South Carolina in 1813, Sims received a schooling not very different from that enjoyed by Daniel Drake. The elder Sims tried to give his son such educational advantages as were available, and was greatly disappointed when the latter announced his desire to study medicine (see page 76). Sims graduated from Jefferson Medical College in Philadelphia in 1835, and eventually settled in Alabama.

It was in 1845 that he began to attempt the treatment of vesico-vaginal fistula—a condition where there is an opening from the bladder into the vagina leading to incontinence of urine. After three years he achieved success (see page 175), and in 1853 reported his results. Sims moved to New York in the same year. Here, despite the opposition of other doctors, he founded the Woman's Hospital, which opened in 1855. In 1861 Sims went to Europe, where he was very favorably received, and demonstrated his operation. He practised in France and England for a number of years, returning to New York in 1872. He died in 1883.

During his lifetime, Marion Sims received many honors, including numerous

decorations from foreign governments In the words of Victor Robinson, "No American breast had ever been covered with so many ribbons" In 1876 he was elected President of the American Medical Association, and in 1880 he was accorded the same honor by the American Gynecological Society Yet despite all these evidences of esteem, Sims retained a simple boyish quality which is revealed in his delightful autobiography *The Story of My Life* (1888)

THE next year, 1819, when I was six years old, my father sent me to a boarding-school, some six or eight miles from home The teacher here was an Irishman, Mr Quigley, a man about fifty-five years old, and a rigid disciplinarian, altogether very tyrannical and sometimes cruel He was badly pock-marked, and had lost an eye by small-pox—otherwise a handsome man I was very unhappy at his house He had two grown daughters, one of the daughters was very unkind to me, the other was sympathetic But my impressions then and my convictions now are that the best place for a child under ten years of age is with his mother A very curious custom prevailed in this school, which was that the boy who arrived earliest in the morning was at the head of his class during the day, and was considered the first-honor boy The one who arrived second took the second place, and so on There was great rivalry among some half-dozen of the most ambitious of the boys James Graham was about ten years old He was almost always first in the morning Although I was so very young, only six, I occasionally made efforts to get there earlier than he did I suppose the school-house was not more than three quarters of a mile from the teacher's residence, where I boarded, but it seemed to me, at the time, that it was very much farther than that However, the boy that got ahead of James Graham had to rise very early in the morning I remember getting up one morning long before daybreak The dread of my young life was mad dogs and "runaway niggers" I started off for the school-house on a trot, an hour before day, looking anxiously from side to side, and before and behind, fearing all the time those two great bugbears of my young life, viz, mad dogs and runaway niggers, with which the minds of the young were so often demoralized by negro stories When I arrived at the school-house the wind was blowing very severely It was in the autumn, the acorns were falling on the clap-boards covering the log-cabin, and I didn't feel very comfortable, and was most anxious for James Graham to come At last he arrived, greatly to my relief This was my first and last first-honor day I was content after this to resign this post to James Graham

This teacher had one remarkable peculiarity in regard to the admission of small boys to his school It made no odds whether a boy was good or bad, he invariably got a flogging on the first day The teacher always sought some pretext to make a flogging necessary, and when he began he seldom stopped until the youngster vomited or wet his breeches

My father came to see me but once during the six months I was in this

school My mother came to see me about once a month I was dying to tell her of the bad treatment I received from the teacher and from one of his daughters The old gentleman was very obstinate, and not only punished me unnecessarily at school, but he would not let me have what I wanted to eat, and would compel me to eat things absolutely distasteful to me I wished to tell my mother of all this, of how Miss Nelly used to box my ears and pull my hair, and how old Quigley used to punish me, but I was too closely watched I could never get her to one side, never see her alone At last I became desperate And right in the presence of the whole family I told the whole truth of the severe treatment that I had endured ever since I had been there, and that she must take me home, if she didn't, I would run away and leave the place even if I were captured by runaway niggers and devoured by mad dogs I would have run away long before, but for the dread of mad dogs and "runaway niggers"

As soon as my mother went home, and told my father what had occurred, he sent and removed me to my own home again, where I was as happy as the day was long I must say, however, that, in spite of all the disagreeable things of this school, they managed to make the boys learn very cleverly I used to lie awake nights, and think about what I could do to get home And then it was that the idea of an elevated road came into my mind strongly My idea was that all little boys placed at boarding-schools should have a trough reaching from the school to their homes, elevated on posts and girders, ten feet above ground, so that they could climb up and get into this trough and run home without the fear of either mad dogs or runaway niggers

1809 — 1894

OLIVER WENDELL HOLMES

Only scant memoranda document the college career of Dr Holmes Most important are his own reminiscences, and several letters to his friend Phineas Barnes It is from one of these letters that the following selection is taken

August 15, 1828

DEAR BARNES,—I suppose I must begin with an apology for not writing sooner I have been away from home about a month, or I would not have been guilty of such neglect Your letter was the first token of remembrance that I have received from any of my old Andover friends or acquaintance, saving certain catalogues of the different colleges, in which article I have kept up quite a brisk correspondence With regard to myself I am determined that you shall not be so much in the dark I shall therefore describe myself as circumstantially as I would a runaway thief or apprentice I, then, Oliver

Wendell Holmes, Junior in Harvard University, am a plumeless biped of the height of exactly five feet three inches when standing in a pair of substantial boots made by Mr Russell of this town, having eyes which I call blue, and hair which I do not know what to call,—in short, something such a looking kind of animal as I was at Andover, with the addition of some two or three inches to my stature Secondly, with regard to my moral qualities, I am rather lazy than otherwise, and certainly do not study as hard as I ought to I am not dissipated and I am not sedate, and when I last ascertained my college rank I stood in the humble situation of seventeenth scholar You must excuse my egotism in saying all this about myself, but I wish to give you as good an idea as I can of our old friend, and I think now you may be able to form an idea of him from this The class we belong to is rather a singular one, and I fear not much more united than yours I am acquainted with a great many different fellows who do not speak to each other Still I find pleasant companions and a few good friends among these jarring elements

1 8 4 3 — 1 9 2 6

OTTO HEUBNER

Otto Heubner's account of his schooldays is of interest for two reasons First of all, it emphasizes the influential rôle of the teacher, and secondly, it deals with that remarkable educational institution, the German *Gymnasium* It may be said that in our day the importance of the teacher need hardly be stressed Yet the current crisis in education with its proposals and counter-proposals for change tends to relegate to the background the fundamental fact, that no matter how well conceived a program may be, in the last analysis a creative teacher is needed or it will suffer fatally "Teaching is an art" said William James, and he might have added that like any other artist, a teacher "can never tell where his influence stops" (Henry Adams) Heubner's musical development under the guidance of a talented teacher aptly illustrates this, for music remained a permanent influence throughout his life

As for the *Gymnasium*, Heubner's retrospective remarks reflect a burning educational issue of the time The humanistic *Gymnasium*, which for a long time was the only road to the university, and hence to a professional career, suffered, according to its critics, from the narrow range of subjects prescribed or stressed In the humanistic curriculum everything revolved around the classics, but, argued the critics, scientific and mathematical subjects, as well as modern languages are more important for the contemporary world than the classics Feeling ran high in this controversy, but eventually the sciences were accorded the same rank as the humanities

Heubner's judgment, arrived at after a lifetime of experience, probably represents as well balanced an estimate as possible of the humanistic curriculum References to various aspects of the *Gymnasium* occur in many German medical autobiographies of the nineteenth century (see also pages 42 and 49)

ON MAY 28, 1850 I entered the Mylau elementary school, in the class of the schoolmaster and organist Lohse. This man exerted a considerable, and for me in many respects a very favorable influence on my development. He was a large, distinguished man with a noble physiognomy, which was not marred by his spectacles, framed by flowing curly hair, but beardless. Year in, year out he wore a long coat extending almost to his ankles and almost always buttoned. In school he was strict, and he did not shrink from using the rod, nevertheless, basically his nature was kindly, firm and upright towards everyone, as he showed on various occasions. For my father he felt great respect and gratitude because of some charitable act that my father had once done for his brother. This sentiment was undoubtedly not without influence on his attitude towards the son. As a result he was not simply a teacher in his relation to me, but rather a paternal friend who looked after me, e.g. several times he accompanied me to and from Plauen on walking tours that I made during vacation periods in order to reach Muhltroff. Our relationship became particularly close when after a short time he perceived that I not only had a good musical ear, but also a clear soprano voice, which he knew how to put to use for his musical nature, and for a teacher who had received his education in a [teacher's] seminary, he had an unusual musical education. His organ preludes and postludes—for a composition by Silbermann which towered above the style of the old shabby church—were full of imagination and character. On the piano he was able to improvise brilliantly on any theme that was given him. From among the children of the rustic little town he had developed a church choir which I joined soon after entering the school and where I soon took a leading place as a soprano. In the spring of 1851, notice was already taken of my singing ability and in the summer of 1851, I was able to sing several songs. At the same time I received instruction in playing the piano. In the summer of 1852 I already sang solo in church, in the summer of 1853, at a concert of the Mylau Choral Society, I took part in a solo quartet, and at the end of September when the *Creation* of Haydn was produced for the harvest festival, I was given the arias of Eva and of the Angel Gabriel.

My musical teacher not only gave me piano lessons, but also initiated me into the basic rules of thorough bass, so that soon I not only felt at home with the keys, but also learned to understand figured bass, exercised myself in transposition, and was even able to compose several pieces, songs and the like, for the organ. I still have in my possession a song, the *Erkoning* by Schubert, which Lohse presented to me in 1853. Gradually with "my own accompaniment" it became one of my bravura pieces. At times, however, I had less pleasant tasks. The schoolmaster used to tune his favorite instrument himself. His nephew Moritz, who lived with him for some time, had to work the bellows, and many a long, beautiful summer afternoon I sat on the organ bench and kept the stops of the individual keys pressed down, while the master crept around in the organ and hammered around on the pipes, which

then produced a wretched squeaking until they were again brought back to a pure tone

Thus, as a result of the fortunate circumstance that Mylau at that time had an unusually talented and musical teacher, in the person of Schoolmaster Lohse, who became aware of my own talent, I acquired at a very early age some understanding of important musical works of art, and my life was thus enriched by a receptivity for finer pleasures. Moreover, much later I noticed partly by accident that my musical talent consisted not only in a good ear which made it easy for me to practice songs and to sing at sight, but also that my ear differed from that of many other equally musical persons in that I immediately recognized the absolute musical pitch of piano and orchestral pieces without any effort. For instance, when complicated chords were struck in a neighboring room, I was able immediately and precisely to name the component notes, an ability which I have retained permanently.

Our education, it must be said, had very few points of contact with the requirements of later life. What a future doctor needed, an introduction to mathematics and the natural sciences, was lacking beyond measure. The French teacher was very boring and did not know how to interest us in the language. What I had learned of English in the Realschule [non-classical secondary school], I carried on autodidactically. The presentation of the German poets consisted of exceedingly dry discussions, e.g. when we read Schiller's ballad, *The Diver*, we were regaled with the various methods of the diver's craft, Goethe's *Faust* was accompanied by philological explanations as to the years in which the individual scenes were composed, which is very interesting for the student of Goethe, but was immaterial for us. The teacher who was supposed to initiate us into German literature was a kind man, but a very poor musician. To make up for this we read whatever we pleased privately, and studied the *Literary History* of Vilmar, which was very popular then. Yet all this does not characterize the essence of our intellectual atmosphere: we lived, moved and had our being in classical antiquity. Of the German present we heard nothing, the teaching of history did not go much beyond The Thirty Years War—But in the history of the Greeks and Romans we were very much at home. The Age of Pericles with its poets and philosophers, the Homeric epics, the tragedians, the Punic Wars, Caesar and Cicero, whose orations and letters particularly interested us more than anything. Horace, interpreted by Rector Wunder was our delight. Almost all posts and arrangements had Latin names, the two class leaders were the decurions, the newly entered student was called novex, and the annually recurring farewell party, which was held one evening in the dormitory was known as the valediction. The upper-fourth-form boy who was promoted to the next higher class (Sekunda), went to the Vale of Tempe—a pleasant spot near the village of Doben, where the students regularly went for their first walk after

promotion—, in order to jump there over the stream that separated the upper class from the lower class, and so forth

Now was this life that we led during our adolescent years in a world of the imagination, our innermost mind mainly averted from the real world around us outside the school walls—but in a world of the imagination inhabited by the noblest poets and thinkers of the human race—, was this life a wanton waste of the important years of youth which should have been applied to more useful studies and labors that would have been more valuable for later scientific and business training, as is so often asserted at present in judging the humanistic gymnasium? One must certainly admit that better preparation in scientific subjects, mathematics, physics, chemistry, as well as in geography and modern history, such as the humanistic gymnasium now also offers, would send to the university students who would be more mature and better prepared for advanced studies, than was the case with us who entered the medical and scientific lecture-halls of the university with an extremely defective preliminary training. But didn't we make up what we lacked, when we came into the hands of good university teachers? Did later life bring to maturity fewer capable doctors, teachers, scholars and scientists from among the gymnasium students than from the ranks of the students who attended non-classical secondary schools? There are no statistics on this point, nevertheless, it would be interesting to compile information on the life-histories of about fifty classes of graduates from various gymnasiums and non-classical secondary schools. It may be assumed that a classical education does not represent the right type of training for a gifted research scientist, since for many years it restricts the mind to a limited field of thought although it would hardly suppress such a gift completely. In this connection, I do not wish to pass over in silence the circumstance that out of the group of about 240 fellow-students who passed before my eyes in Grimma during my attendance there, as far as I know there did not emerge a single creative mind. There were large numbers of competent officials, pastors, physicians, some of whom attained high positions—but there was no pioneering mind among them. Did the type of education that we have described smother such divine sparks, did it retard to such an extent the free development of independent thought and activity? This can hardly be assumed, it is more probable that genius is so thinly sown, that a group of several hundred boys will probably not be large enough to produce one!

1 8 4 4 — 1 9 2 4

FRIEDRICH TRENDELENBURG

An outstanding German surgeon of the later nineteenth century, trained in the tradition of the schools of Berlin and Vienna, Friedrich Trendelenburg left his mark on the surgical achievement of his time. He was one of the first to introduce

and to propagate the practice of aseptic wound treatment. Among surgeons, he is best remembered for the Trendelenburg position (elevation of the legs and pelvis during and after pelvic operations). Trendelenburg studied medicine at Berlin, where his father was professor of philosophy. After receiving his degree, he served as assistant to Bernhard von Langenbeck. This was followed by a period of military service during the Franco-Prussian War. Later, Trendelenburg was professor of surgery in Rostock, Bonn, and Leipzig.

It is interesting to note that Trendelenburg had a deep interest in the history of his specialty, extending back to his student days. His doctoral dissertation *On the Surgery of the ancient Indians*, deals with the work of Susruta, an Indian surgeon who lived in the second century A.D. Later he dealt with the history of surgery in Germany, especially the development of the German Surgical Society.

Practically every autobiographical account underlines the decisive influence of the teacher on the subject. Usually this occurs in the traditional classroom. Sometimes, however, the home replaces the schoolroom and the father takes the place of the professional teacher. Probably the best known instance of such a paternal mentor is James Mill, the Utilitarian reformer, who made his son, John Stuart Mill, the subject of a ruthless educational regime. In other cases, however, conventional schooling may be combined with paternal instruction, and this we find in the description given by Friedrich Trendelenburg. Of particular interest is the emphasis on learning by doing and on manual training. And as a negative counterpart to the progressive teaching of Trendelenburg's father we have the ossified pedants at school.

Trendelenburg's autobiography, written shortly before his death in 1924, provides an intimate picture of an important period in the development of modern medicine.

TO THE instruction received from mother and aunt were soon added regular lessons given by an elementary school teacher who came to our house. At first it was a Herr Reinboth, then Herr Rademacher and, finally, Herr Fischer. The latter had suffered in childhood the misfortune of having his arm mangled by the fly-wheel of a machine, and consequently always had the left sleeve tucked into his coat pocket. This fate may have contributed to make him more serious and more reserved than is desirable for a teacher of children, but we liked to take our lessons from him and we endeavored to be of assistance to him in putting on his cape or whenever the lack of an arm appeared to hinder him. I still remember the subject for a composition given to us—probably by the preceding teacher—when my youngest sister was born. Is it or is it not desirable to have small brothers and sisters?

Father placed special value on instruction in drawing, in part from models, in part from wooden blocks made particularly for this purpose in various shapes. I was always especially grateful to him for this, later I often had occasion to convince myself in the case of others that it is a great lack when both eye and hand have been deprived during youth of the exercise provided by drawing.

Provision for achieving manual dexterity was also made in another manner

In a remote veranda equipped with glass windows known as the balcony room, I was able to install a small carpenter's workshop, and even if the instrumentarium was not large, yet I learned to use a saw, hammer, pliers, drill and file, for which many boys find no opportunity. Later, I often asked my students, when they behaved very clumsily in the surgical courses, whether they ever had had a saw in the hand before, and not infrequently received a negative answer. My kind eldest sister Marie took a special interest in my little shop, and often helped me to get the necessary wood by a contribution from her pocket money. When I was 11 years old I was sent to a bookbinder, and while I did not become a master in this handicraft, yet I learned enough to bind my Julius Caesar myself, and to be able to make a whole series of portfolios for Father's manuscripts.

Through conversation at table and particularly during walks, Father also tried to provide instruction for us, and to stimulate us to observe and think. Generally, we went walking with him only on Sunday afternoons.

When I entered the fifth form, my new school-bag on my back, I received the usual welcome which was the lot of newcomers. The pupils formed a circle around the stranger within which he was pushed and tossed about. The master in charge of the fifth form was not exactly the ideal teacher. He liked to sit at an angle to his desk with his feet dangling over the side, eating a thick sandwich and reading the newspaper while we toiled at our written assignments. It was a very distressing experience for me when he caned a poor fellow who had repeatedly angered him. When he was in a good mood, however, things sometimes went merrily, especially when we recited Latin numerals. This we did standing on the benches with the school-bags open on the table before us, each one had to recite a number, the next pupil following with the succeeding number as quickly as possible. For each mistake one moved down one place, while one's neighbor advanced one place, so that there was a constant shuffling and stamping.

Among the other teachers in the various classes there were some who after constantly and repeatedly cramming students with Latin and Greek grammar in the same way for years had become thoroughly ossified and were complete bores. Typical of such pedants was the master of the lower or the upper third form, a man of about forty years, who was always coughing and looked consumptive.

1869 —

ALICE HAMILTON

Another interesting example of unconventional-schooling is provided by Alice Hamilton. A reading of her life story leaves little doubt that this early training at home was an important factor in preparing her for the career to which she has

devoted her life. A native of Indiana, Dr. Hamilton studied medicine at Michigan where her teachers were John J. Abel, W. H. Howell, F. H. Novy, Victor Vaughan, and George Dock, all outstanding men. This was followed by further study in Germany, and at Johns Hopkins.

In 1897 Alice Hamilton went to Chicago to teach pathology in the Woman's Medical School of Northwestern University. At the same time, she became a resident of Hull House, the pioneer settlement house, founded in 1889 by Jane Addams. Here she learned to know at first hand the pressing social problems of our society and also that something could be done about them. It was this experience at Hull House that aroused her interest in industrial diseases, and in 1910, when Governor Deneen of Illinois appointed an Occupational Disease Commission, Dr. Hamilton was included among the members. This led to her pioneering studies of lead poisoning among pottery workers and painters. For the next thirty-odd years her energies were devoted to the discovery and prevention of occupational disease.

In 1943 Alice Hamilton published her autobiography, *Exploring the Dangerous Trades*, in which she gives an inspiring account of her work, as well as a picture of life as she saw it.

RELIGION, as it was taught to us, had little authoritarianism, certainly credulousness was not encouraged. The first piece of "research" I ever undertook was when I was about twelve years old. My father set me the task of finding proof of the doctrine of the Trinity in the Bible. His own belief was that this doctrine was a later addition to the Gospels, and he had no hesitation in setting me on an inquiry which might bring me to the same conviction. But in those days there was no pragmatism to shake a child's belief in Christian ethics. We never questioned the rightfulness of truth-telling, honorable dealing, unselfishness, self-control. To base them on practical advantage to oneself or even to society would have been to shake the foundations of our moral world. Actions were right or they were wrong, and when they were wrong we knew that the eyes of the Lord are in every place beholding the evil and the good. This unquestioning acceptance of a moral code, together with a strong family background, made us more "rooted and grounded," but not I think, so dependent on our elders as are the children of today.

Our education was very uneven, with serious omissions. Fort Wayne had only public schools, and my mother objected to the long hours from nine in the morning to four in the afternoon. My father objected to the curriculum—too much arithmetic and American history, neither a subject which interested him. So we did not go to school and we could be out of doors during the sunny hours. We had a smattering of mathematics, taught by a day governess, but I never got beyond the beginning of algebra. We learned what our parents thought important: languages, literature, history. We had formal teaching only in languages, the other subjects we had to learn ourselves by reading, and we did. Most of the hours we spent indoors were spent over books. My father taught us Latin, my mother talked French with us when

we were little and saw to it that we had French lessons later on. Our German came first from the servants, who were always German, then from a Lutheran schoolteacher.

Of science we had not even a smattering, beyond what we could gather from my father's favorite Max Muller. Yet in a way we were trained in habits of scientific approach. We were not allowed to make a statement which could be challenged unless we were prepared to defend it. One of my father's favorite quotations was, "Be ready always to give a reason of the hope that is in you." When we could not answer a question he would send us to the *Encyclopedia Britannica*, to look it up. Of course the articles were often beyond our comprehension. When I told him that my cousin Allen was studying physics in his Boston school and I wanted to study it too, he said, "It is all in the encyclopedia." And it was, but not in a shape for a girl of fourteen.

The habit of doing one's own searching for the knowledge one wanted was valuable, but the field that attracted me was too limited. As I reached my teens, instead of turning to the natural sciences, of which I was completely ignorant, I taught myself Greek and Italian and read the French classics. Of American literature I knew little. My father had a great impatience with what he considered the woolgathering of the New England school and I knew nothing of Emerson, little of Hawthorne. Poe was the only American poet he respected. He liked clarity and definiteness—Macaulay and Froude, Addison, Pope. He read us Macaulay's *Lays* and Scott's poems, and he made Edith and me learn the whole of *The Lady of the Lake*, reciting a few lines every evening, to "train our memory." Later on he would give us a page of Addison which we must read over three times and must then write out in Addison's words. He hated sentimentality, and though that term to him sometimes covered my mother's generous enthusiasms and indignations, it was probably a wholesome factor in the household of women.

1 8 7 5 —

ALBERT SCHWEITZER

It has been said that Albert Schweitzer's *Aus meiner Kindheit und Jugendzeit* (My Childhood and Youth) may be used as a touchstone for other autobiographies. Read it "side by side with any autobiography," says Stuart Bates, "and the qualities and defects of the other will straightway stand out in relief." With this one can only agree, for in the autobiographical writings of Albert Schweitzer the reader finds epitomized a very remarkable personality. Physician, theologian, philosopher, he is probably best known as an organist and an interpreter of the music of Johann Sebastian Bach.

Born an Alsatian, Schweitzer enjoyed the advantages of growing up in a bilingual borderland. After studying at Strassburg, Paris and Berlin, he became a

member of the theological faculty at Strassburg. During this period Schweitzer was occupied with philosophy, theology and music. In 1905 he suddenly decided to become a medical missionary in French Equatorial Africa. The suddenness of this decision was more apparent than real, however, for it was actually the culmination of a process of development extending back some eight or nine years (see page 120). Medical study at Strassburg occupied Schweitzer until 1912. The following year he set out for Lambarene in French Equatorial Africa. In 1917 Schweitzer and his wife were interned in France and the work that had been carried on for four years was interrupted until 1924. It was during this period that he brought to completion and published his two-volume work on the philosophy of Western culture.

In all of Schweitzer's activities may be seen a variety of qualities that had already been inherent in him as a boy. These qualities find their frankest expression in Schweitzer's description of his boyhood and youth from which the following selection has been taken.

AT THE very beginning of my school-days I had to deal with one of the heaviest blows with which the school of life can confront us. A friend betrayed me. It happened thus. When I first heard the word "cripple," I did not rightly know what it meant. It seemed to me a suitable term for the expression of a particularly strong dislike, and as such I adopted it. The new teacher, Fraulein Goguel, had not yet won my favor, and so she was labeled with the mysterious word. After this, while watching the cows together with one of my dearest comrades, I confided to him with an air of great mystery, "The teacher is a cripple, but don't tell anyone." He promised not to tell.

Soon after this we quarreled on the way to school. On the stairs he whispered to me, "Good, now I will tell the teacher that you called her a cripple." I did not take the threat seriously as I did not believe such treachery to be possible. During the break between classes, however, he actually went up to the teacher's desk and announced, "Miss, Albert said that you're a cripple." The matter did not lead to any consequences, as the teacher did not understand the significance of this denunciation. I, however, was unable to grasp this terrible act. This first encounter with treachery smashed to bits everything that I had previously thought and expected of life. Several weeks were necessary for me to come to terms with this experience. Now I had learned about Life. Within me I bore the bitter wound that it gives to all of us, and which it keeps open with repeated blows. Of the blows that I have received since then some were more serious than this one, but none was as painful.

Even before I went to school my father had begun to give me music lessons on an old square piano. I did not play much from notes, but I liked to improvise and to render songs and choral melodies with an accompaniment of my own composition. Consequently, when in the music hour the teacher doggedly beat out a hymn note by note without accompaniment, I felt that it was not beautiful, and during the interval between classes I asked her why she did not play it correctly with accompaniment. Overcome by my enthusiasm I

sat down at the parlor organ and played it for her clearly in several parts Thereupon she became very friendly and looked strangely at me Nevertheless, she herself continued to play the hymn with one finger Only then did I realize that I was able to do something that she could not, and I was ashamed for having shown off my ability, which I had looked upon as something self-evident

On the whole, however, I was a quiet, dreamy student, who learned to read and write but not without difficulty

One other thing comes to mind from my first year at school Before I went to school, my father had told me many Biblical stories, including the story of the Flood When a very rainy summer occurred, I came to him with the remark "Well, it has now rained almost forty days and forty nights, and the water does not even come up to the houses, let alone to the tops of the mountains" "Yes," he replied, "at that time, at the beginning of the world, it didn't rain in drops, as it does now, but rather as if buckets of water were being poured out" This explanation satisfied me But then when the teacher in school also told about the Flood, I waited for her also to point out the difference between the rain at that time and the rain now However, she omitted to do so I could no longer contain myself "Teacher," I called out from my seat, "you must tell the story correctly" Without waiting for her to tell me to be quiet, I continued "You must say that it did not rain in drops at that time, but as if water were poured out of buckets"

When I was eight years old, my father, at my request, gave me a New Testament, which I read with great zeal Among the stories that occupied me most was that of the Wise Men from the East What did the parents of Jesus do with the gold and jewels that they received from these men? I asked myself How could they be poor again afterward?

It was completely incomprehensible for me that the Wise Men from the East later no longer concerned themselves with the child Jesus I was also greatly shocked at the circumstance that nothing is mentioned about the shepherds of Bethlehem later becoming disciples of Jesus

During my second year at school we had penmanship lessons twice a week with a teacher who just before that gave singing lessons to the older pupils It sometimes happened that we came over too early and had to wait outside the schoolroom of the older pupils At such times, when the duet "Down at the mill I sat in sweet repose," or "Whose are you, beautiful forest," began, I had to lean against the wall so as not to fall down The feeling of rapture, that this two-voiced music aroused in me, spread through my entire body Likewise, when I heard the music of a brass band for the first time, I almost fainted The tone of the violin, however, did not seem beautiful to me and I only accustomed myself to it gradually

It was while I was at the village school that the bicycle made its appearance We had already heard coachmen inveighing against people who dashed along on high bicycles and frightened the horses One morning, however,

while we were playing in the school-yard the word got around that a "racer" had stopped at the inn on the opposite side of the street. Forgetting the school and everything else, we ran over there and marveled at the high bicycle, which stood outside. Many adults also gathered there and waited with us for the rider to finish his glass of wine. Finally he came out, whereupon everyone began to laugh at the sight of a grown man wearing short pants. But in a moment he was on his bicycle again, leaving us behind.

In the middle of the 'eighties, other bicycle types began to make their appearance. First there were the so-called "Kangaroos," with one large and one small wheel, but soon one began to see low bicycles. At first those who ventured to ride these were ridiculed because they did not have sufficient courage to sit on the high bicycles.

During my next to the last year at the gymnasium, I acquired a bicycle, something which I had long and passionately desired. The money for this purpose had been earned over a period of a year and a half by giving mathematics lessons to students, who were retarded in this subject. It was a second-hand bicycle and cost 230 marks. At that time it was still regarded as unseemly for a pastor's son to ride a bicycle. Fortunately my father disregarded these prejudices, but there was no lack of voices that censured the "arrogant" action of his son.

The well-known orientalist and theologian, Eduard Reuss of Strassburg, was opposed to the use of the bicycle by students of theology. In 1893, when I entered the Thomas college as a theological student, bringing my bicycle with me, the headmaster, Erichson, remarked that he was able to permit me to have my bicycle only because Professor Reuss was dead.

The young people of today can no longer imagine what the introduction of the bicycle meant to us. A previously unsuspected possibility of getting out into nature was opened up for us. I used it abundantly and with pleasure.

I recall the first tomatoes, as I do the first bicycle. I may have been about six years of age when our neighbor Leopold, having planted tomatoes in his garden, brought us some of the red fruit as a great novelty. This gift put mother in an embarrassing position as she did not know how to prepare it. When the red sauce appeared upon the table, it received such a poor reception, that most of it ended in the garbage pail. It was not until the end of the 'eighties that the tomato was accepted in Alsace.

My passion for reading was boundless. Even today I am still addicted to it. Having started to read a book, I am unable to put it down. Instead, I would rather read through the night. At the very least, I must have leaved through it to the end. If it pleases me, I will then read it two or three times in immediate succession.

For my aunt, this "swallowing of the books," as she put it, was an abomination. She herself had a passion for reading, but it took a somewhat different form. She was a former school teacher, and so she read, as she said, "to enjoy

the style, which is the main thing" She read for three hours every evening while knitting or crocheting, one hour before, and two hours after supper When the style was very beautiful, the movement of the needles slowed down, like the gait of horses when the coachman is not watching them Sometimes she would exclaim "Oh, this Daudet! Oh, this Theuriet! What style! Oh, how this Victor Hugo can describe things!"

During the reading of Julius Stinde's *Familie Buchholtz*, she laughed until the tears ran down her cheeks, but this did not induce her to extend her reading for even another quarter hour At half past ten she put the bookmark into the volume and shut it

So we sat with our varied reading passions at the same table, and each of us was a riddle to the other My aunt was anxiously concerned about my education, and checked every time that I completed a book too rapidly At times she toiled with kindness, at others through the use of authority and sarcasm to stop me from "sniffing through" the books, and to convert me to a more moderate reading tempo But it was all in vain No one can do anything contrary to his nature Her remonstrances moved me all the less, as I was convinced that even when devouring a book one can pay attention to the style, indeed, it is just then that one can best distinguish good from bad writing If, while reading hurriedly, I succumbed to the temptation to skip many sentences and even complete descriptions, I concluded that the book was poorly written However, if I became so entranced that I had to read every sentence, then I felt that the style must be good And today I am still of the same opinion Nevertheless, I took care not to parade my wisdom before my aunt I had to avoid irritating her in any way on the reading question In this matter I was completely in her power It depended on her whether I would be permitted to read a quarter of an hour more or less

She looked with a particularly jaundiced eye on the circumstance that I became an enthusiastic newspaper reader at an early age Only a quarter of an hour was at my disposal for this purpose, namely, the interval when the table was being set for supper, and during which time I consequently had to interrupt my home work At these times I seized the *Strassburger Post*, the *Mulhauser Tagblatt*, and the *Neue Mulhauser Zeitung* My aunt, however, wanted to forbid my newspaper reading on the ground that I read only the murder stories and the serialized novels I, for my part, insisted that I was particularly interested in politics, especially in contemporary history I was about twelve then, and so the dispute came before my uncle "We will soon see," he said at supper, "whether the boy actually reads politics" Thereupon he began to question me concerning the names of the reigning princes on the Balkan thrones and those of their prime ministers Then I had to tell him the composition of the last three French ministries, and finally, to present the content of Eugen Richter's last Reichstag speech This examination over fried potatoes and salad was passed with flying colors Thereupon the judgment was handed down that I was to be permitted to read the newspapers not only while the

table was being set, but also after completion of my homework. Naturally, I made use of this decision to enjoy the serial stories. Nevertheless, politics was actually the main thing for me. From that time on, my uncle began to treat me as an adult, and to discuss politics with me at the table.

This interest in public affairs I inherited from my mother. She was a passionate reader of newspapers. She was always annoyed by the circumstance that no papers were printed on the day after Christmas, on Easter Monday and on Whitmonday, even though she was a pious woman and zealously advocated that no work be performed on holidays.

As a result, from the time I was nine years old, I followed contemporary events with interest and experienced them thoughtfully. For earlier periods my uncle's accounts were very valuable for me.

I passed my final examination at the gymnasium satisfactorily but not as well as had been expected. That was due to the trousers which I wore that day.

I had a black frock coat which I had inherited from an old relative of my mother. For reasons of economy I did not want to have any trousers made and asked my uncle to let me wear his to the examination. He was much shorter than I and stout, while I at that time was tall and thin. However, we felt that it would fulfill the requirements for this one occasion.

Unfortunately, I omitted to try on the trousers. On the morning of the examination when I put them on, they hardly reached my shoes, even though I had lengthened the suspenders with strings. Over the upper edge of the trousers, yawned a white space. How they fitted my backside, I shall not say.

My appearance among my confreres taking the examination evoked unrestrained merriment. I was turned around and examined from every side. Our solemn entry into the examination room was a failure, because we were unable to suppress our laughter. When the teachers at the examiner's table saw my trousers, they too began to laugh. The strict Chief Inspector from Strassburg—his name was Albrecht—who was chairman at the examination, did not notice what the matter was. He saw only merriment and made a sharp remark about our undignified behavior in general and about me in particular. In order to drive the insolence out of the presumed wag, he undertook to examine me in all the subjects except mathematics in which it was generally recognized that he was absolutely ignorant. He pressed me hard. Encouraged by friendly glances from the principal, I kept my ground as well as I could. Nevertheless, I was unable to answer some of the questions that the stern one put to me, and had to put up with more than one head shake deploring my ignorance.

He was especially outraged over the fact that I was unable to give him precise information regarding the disposition of the Greek ships as described by Homer. When it became evident that the other candidates did not know much more than I about this topic, he censured this as an unpardonable educational deficiency. For my part, however, I felt that it was an even greater educa-

tional deficiency for us to leave the gymnasium without knowing anything about astronomy and geology

Finally, we came to history, the Chief Inspector's special field After ten minutes he was as if transformed His anger melted away At the end he no longer examined me, but conversed with me on the difference between the colonising enterprises of the Greeks and those of the Romans

In the course of the concluding address, after the announcement of the results of the examination, he again mentioned the pleasure that he had derived from examining me in history A commendation to this effect, which he proposed, embellishes my otherwise very mediocre graduation certificate. Thus everything ended to everyone's satisfaction

III

THE MEDICAL STUDENT

No fortress is entered in one assault, but he who advances his trenches with firm resolve attains his goal To this remain true!

Ernst Von Beigmann

*—in a letter written around 1895 to
his son Gustav who was studying
medicine*

GIROLAMO CARDANO

In 1930, the late Preserved Smith wrote that "suddenly within two years, appeared three of the most momentous works of science that the world has ever seen, Copernicus *On the Revolution of the Heavenly Orbs* (1543), Vesalius *On the Structure of the Human Body* (1543), and Cardan's *The Great Art* (a treatise on algebra, 1545)" While the fame of two of these scientists has grown with the centuries, Girolamo Cardano, though not forgotten, has become a dimmer figure Yet, he surely deserves to have the fame he so greatly desired, not alone for his contribution to science but equally for the *De Vita Propria*, his self-portrait

It is indeed appropriate that the first full-dress medical autobiography should be that of Girolamo Cardano, for in the pitiless self-scrutiny of this Renaissance doctor are to be found many, if not all, the elements that characterize autobiography in general, and medical autobiography in particular Cardano was one of the strangest figures of the sixteenth century, in the first year of which he was born Goethe regarded him as a typical representative of Renaissance individualism, and described him as having been "not a doctor in a long robe who imparts instruction to us *ex cathedra*, but rather a man who goes about, observes and is astonished by what he sees, experiences pain and joy, and passionately thrusts upon us an account of all this"

Every autobiography in some way results from a need for sympathy, self-justification, appreciation, or communication This need, in the case of Cardano, sprang from his illegitimate birth and the many humiliations which resulted from it, from the bigotry of professional rivals and a lively sense of his own achievement and merit, from the execution of one son for murder and the complete moral degeneracy of another, and from imprisonment, banishment and finally, dependence on a papal pension In his book, he describes himself, his virtues and vices, with the detailed objectivity of a scientist depicting a newly discovered animal He presents a regular inventory of his effects, physical, intellectual and moral, down to the most absurd details—the price of his inkstand, the shape of his penknife, and the number of his teeth Indeed, one is reminded of a Sears Roebuck catalogue! Yet, from this encyclopedic self-inventory emerges an unforgettable portrait of an unusual personality The following selection, in which Cardano tells how he came to study medicine, is characteristic

FROM early youth I constantly deemed that profession the best, which cared for life itself From this point of view, the study of medicine appeared to me to be more useful than that of law And I found that not only is it more appropriate to this end, and equally valuable and valid at all times all over the world, but also that it is more honest, resting as it does on reason, the eternal laws of nature, and not like law on the opinions of men Accordingly, I entered the profession of medicine, and not that of law And also because, as I have already said, I not only scorned, but actually fled from advancement through friends, riches, power and honors When my father noted that I had given

over the study of law for that of the philosophical disciplines, he wept in my presence, and lamented that I did not wish to pursue the same studies that he did. He regarded the law as a nobler discipline—and often quoted Aristotle on this point—a discipline which was likewise more suited for the acquisition of money and power, and above all for improving the position of the entire family. He was also grieved that his post as lecturer on jurisprudence in the city [Milan] as well as the honorarium of 100 crowns which he had enjoyed so many years, would not pass on to me, as he had hoped, but that one day he would have to see a stranger as the successor to his post. Nor would his commentaries, which I was to edit, ever be published. For shortly before this there had arisen in his mind the hope that he might achieve some fame with his critical edition of the commentaries of John, Bishop of Canterbury, on optics and perspective. Nevertheless, my will and my purpose were firm, for reasons which I have already set forth. Furthermore, I saw that my father too had not made his way without difficulties and impediments. On this account, therefore, and for other reasons, I remained unmoved by his admonitions.

1 6 6 5 — 1 7 3 8

JOHANN DIETZ

A study of the depths of the human mind, and an acquaintance with the wide range of contradictory and confusing desires, conflicts, and strivings are necessary for an understanding of human behavior. If this applies to the study of those whose language, habits, and daily life are identical with ours, how much more careful must we be in dealing with those who lived in entirely different times and surroundings, and are strangers to us. Here medical autobiography offers a bridge to an understanding of the past. Beyond most other men, the doctor is enabled to observe and to study the wellsprings of human thought and action, and medical autobiography reflects the gamut of experience of the doctor's life. As an example, take the autobiography of Johann Dietz, a German barber-surgeon of the late seventeenth century. The story of his life, which he wrote after reaching the age of seventy, presents an excellent picture of middle-class life at this time. Since Dietz served with the Prussian army in Hungary and with Dutch whalers in the Arctic, his story offers many points of interest, but most important of all we see how life in the late seventeenth century looked to an average man. In his description of his apprenticeship, Dietz gives an amusing picture of the *Lehrjahre* of a barber-surgeon.

AT LAST—when I had barely reached my fourteenth year—my father wanted to make use of me in the rope-walk. I was weakly, however, and had no desire to work there, although I tried it a few times.

My father would not put up with me at home any longer, and one evening he told me "You must go away, now choose today what you want to be."

(About this time—anno 1680—the Administrator of these parts died, and the Elector of Brandenburg, Friedrich Wilhelm, occupied the city and countryside with his troops) Then was a time of mental anguish, of mourning and weeping and praying all night long! God must then have showed me what choice to make that I might serve both Him and those nearest to me, and obtain my daily bread!

„For see this all night I had to do with the things of the barber's calling, and I dreamed of medicine, wherefore I then resolved that this was the end to be achieved

When on the following day I was asked what I had decided my answer was that I wished to become a barber My father looked at me stormily and said, straightway “Who put that in your head? You think you'll be a barber because you'll have such a nice lazy time? And even if it cost no money! Where shall I get that?”—Whereupon I said to him “Some way of getting it would be found, and he might take for that purpose the hundred thalers which my worthy grandmother left me, and of which he had so long enjoyed the use, without having to pay any interest on it ” At which suggestion my father became very angry and absolutely refused my request But it happened as I wished, thanks to my mother's exhortations To Master Schobern, my cousin, I agreed to pay seventy thalers, so that I had still to make arrangements in respect of my inheritance

OF MY APPRENTICESHIP

Some days later I had to leave home and went alone to the master barber to give the matter a fortnight's trial So all went well with me, for one commonly petted the probationer apprentice and allowed him to have all things his own way So it was with me In short, I made up my mind, I would stick to it, however things might turn out

I was indentured to Master Georg Schobern (whose daughter I afterwards married) in the year 1681 To begin with all went well, although for those inexpensive days (when a bushel of corn was worth seven groschen) the living was poor enough every morning we had a slice of dry bread to eat, and for drink water or kofent [a weak small beer], a fare to which I had not been used at home

With the shaving, matters went ill at the outset, inasmuch as having once cut a farmer's chin, I got such a box on the ears that I was deaf for quite a month afterwards Moreover, the whip did not always get mixed up with the towel by which I used to sit on a little trunk, but I always twisted them together, as a precaution, so that I could escape before they could be untwisted

Once of an evening my employer was playing draughts with an advocate, Weiskeken Because I had been carrying dung in the garden that day and was greatly fatigued I sat down on my little trunk and fell asleep Meanwhile—salvo honore—a louder note escaped me When I became aware of this and

immediately made ready to depart, my master tore at his neck-cloth. But I had reached the door and banged it to behind me. And because it was in any case a stout door, which fell to of itself, and he, with his head thrust forward, was trying to follow me, the door struck him such a blow on the fore part of the head that he recoiled into the room. Then a hue and cry was raised. But I was away up the stairs out of an attic window, on to the roof and behind the party-wall. They were afraid. But for my part I would have thrown myself neck and crop from the top of the roof. They had to give me my own way. But I did not go down that night until the matter was settled, and my master had to humble himself.

And this was the harsh way in which they treated me, a cousin, who had given them seventy thalers and a bed as premium.

I had to draw all the water and fetch all the logs for the maid in the kitchen, light the fire, split the wood and so forth. — But it all went for nothing, and soon the daughter began to beg that she should not be too harshly treated, causing me much vexation and many blows. But the master died suddenly of a hot black-pudding, whereas he had said and declared, shortly before this, that if he wanted to sleep o' nights he ought to have got me out of the city before ever I decided to become a barber there—as I did later on.

The drawing of water annoyed me most. To go out into the street with two pails! For I was now in my third year and used to serve many notable people and to dress their wounds. I was actually sent by my master at this time to dress two genteel young women who had the true *bubones* and plague boils on them, and there were others too, but at that time I knew nothing of these. But I got out of the water drawing at last in this way. I made as though to stumble when I was carrying the two full pails, pouring the water all over the room and the house, so that all was a-swim with it. Then there was trouble! But from that time onwards I was no longer obliged to draw water.

1 7 4 5 — 1 8 1 3

BENJAMIN RUSH

Benjamin Rush, physician, reformer, and revolutionary statesman, is one of the most interesting figures in the earlier history of the United States. A graduate of the College of New Jersey and a house pupil of Dr. John Redman, Rush went abroad in 1766, and graduated at Edinburgh in 1768. After a period of study in London and Paris, he returned in the summer of 1769 to his native city, Philadelphia. In August of that year, he was appointed professor of chemistry in the Medical School of the College of Philadelphia, the first medical school in the American colonies.

Rush actively espoused the cause of American independence, served in the Continental Congress, and signed the Declaration of Independence. In addition, he also acted as a military surgeon to the Revolutionary Army and wrote a practical

manual on military hygiene, which was published in 1778 by order of the Congress, and is entitled *Directions for Preserving the Health of Soldiers*. From 1799 until his death, Benjamin Rush was Treasurer of the United States Mint.

The political career of this eminent physician did not preclude many other activities. Rush was an advocate of temperance and in 1773 published anonymously *Sermons to Gentlemen Upon Temperance and Exercise*. He was also a member of the *Pennsylvania Society for the Abolition of Slavery*, a founder of the American Philosophical Society, and belonged almost to every medical, literary, and reform society in the United States, as well as to many foreign societies.

As a doctor, Benjamin Rush was a transitional figure, making keen observations on the one hand, and, on the other, erecting imposing, logical medical systems based on few data. He was a pioneer in his attitude toward mental disease, and is still remembered for his account of the epidemic of yellow fever in Philadelphia in 1793, which led to an acrimonious polemic with William Cobbett. Throughout his life Rush was engaged in vigorous controversy with his professional colleagues and his political adversaries.

In his views Rush is a representative of the Enlightenment, that optimistic period when men still believed that by the use of reason and common sense alone the Heavenly City could be erected on this earth. His autobiography is contained in *A Memorial containing Travels through Life or Sundry Incidents in the Life of Benjamin Rush* (edited by L. A. Biddle), 1905.

IN THE month of September 1760, I was admitted to the degree of Bachelor of Arts. Before I left College Mr. Davies asked me what profession I intended myself for. I told him I had been advised to study the law. He approved of the advice, and added that he "believed I should make a better figure at the bar than in the walks of a hospital." This opinion fixed my determination, and my mother in consequence of it applied to a lawyer in Philadelphia to take me into his office. Previously to my sitting down to study, I was prevailed upon to accompany one of my old schoolmates on a visit to his family in Somerset county in Maryland. On my way there and back again I stopped a few days at Dr. Finley's Institute. Before I took leave of him on my return home, he called me to the end of the piazza and asked me whether I had chosen a profession. I told him I had, and that I expected to begin the study of the law as soon as I returned to Philadelphia. He said the practice of the bar was full of temptations, and advised me by no means to think of it, but to study physic. "But before you determine on any thing (said he) set apart a day for fasting and prayer and ask of God to direct you in the choice of a profession." I am sorry to say I neglected the latter part of this excellent advice, but yielded to the former, and accordingly obtained from Mr. Davies, whom I saw soon afterwards in Philadelphia, a letter of recommendation to Dr. John Redman to become his pupil. On what slight circumstances do our destinies in life seem to depend! All my friends objected to my choice. One of my classmates wrote me a long letter full of remonstrances against it and reminded me of the credit I had acquired at the College as a public speaker.

There were periods in my life in which I regretted the choice I had made of the profession of medicine, and once, after I was thirty years of age, I made preparations for beginning the study of law. But Providence overruled my intentions by an event to be mentioned hereafter. I now rejoice that I followed Dr. Finley's advice, I have seen the hand of heaven clearly in it. This fact is recorded to shew that our feelings sometimes mislead us, as well as our reason, and that we often regret having done or omitted things which time discovers to have been most for our interest, or for the benefit of our fellow-creatures. I might have acquired more fortune and rank in life in the profession of the law, and probably have escaped much of the vexation and distress that are connected with the practice of medicine, but I am sure I have been more useful in the latter profession, and therefore acquiesce in my lot, and were I to choose an employment over again, a conviction of suffering all the persecution that has followed me for my opinions and practice would not alter my predilection for medicine. In the month of February 1761, I began the study of medicine, and continued constantly in my master's family and shop 'till July 1766. During this period I was absent from his business but eleven days, and never spent more than three evenings out of his house. My master at this time was in the most extensive business of any physician in the city, and as he had at no time more than two apprentices, he kept them constantly employed. In addition to preparing and compounding medicines, visiting the sick and performing many little offices of a nurse to them, I took the exclusive charge of his books and accounts. It may not be amiss to mention here that before I began the study of medicine, I had an uncommon aversion to such sights as are connected with its practice. But a little time and habit soon wore away all that degree of sensibility which is painful, and enabled me to see and even assist with composure in performing the most severe operations in surgery. The confinement and restraint which were now imposed upon me gave me no alternative, but business and study, both of which became in a short time agreeable to me. I read in the intervals of business and at late and early hours all the books in medicine that were put into my hands by my master, or that I could borrow from other students of medicine in the city. I studied Dr. Boerhaave's lectures upon Physiology and Pathology with the closest attention, and abridged a considerable part of Van Swieten's commentaries upon his practical aphorisms. I kept a common place book in which I recorded everything that I thought curious or valuable in my reading and in my master's practice. To him I am indebted for the estimation in which I have always held the works of Sydenham. He put them into my hands soon after I went into his shop, and frequently alluded to his opinions and practice, particularly in the treatment of Epidemics. However laborious and self-denied my situation was during my apprenticeship, I owe much to it. It produced in me habits of industry and business which have never left me. It rendered diseases in all their forms and symptoms familiar to me, and gave me a facility in knowing them which is to be acquired in no other way. During my residence

in Dr Redman's shop, he was one of the physicians of the Pennsylvania Hospital by which means I was admitted to see the practice of five other physicians besides his own in the hospital. It was during this time likewise that the medical school of Philadelphia was founded by Dr Shippen and Dr Morgan. I attended the lectures of the former on Anatomy in 1762 and 1765 and of the latter on *Materia Medica* in the last of those years.

We arrived in Edinburgh about the first of November and fixing ourselves in lodgings, obtained tickets of admission to the different lectures. The medical professors at that time were Drs Monroe, Cullen, Black, Gregory and Hope. I attended this season the lectures on Anatomy, Chemistry, the institutes of medicine and natural philosophy and the practice of the infirmary.

Finding myself less acquainted with classical and philosophical learning than was necessary to comprehend all that was taught in medicine, I employed the summer months in reviving my knowledge of the Latin language and studying the mathematics under a private tutor, in each of which I advanced with a rapidity and pleasure I never had known before. It is because those branches of learning are taught too early in life, that they are so little relished or so imperfectly understood by young men. During this summer and part of the autumn I likewise made myself master of the French language, and acquired so much knowledge of the Italian and Spanish languages as to be able to read them. I was taught the French by a man of uncommon genius of the name of Coumans, who strictly forbade me to commit a grammar rule to memory. He obliged me from the beginning to read and translate passages from a French book and to write a French version every day. This I could not do without the help of a grammar. By referring to its rules, at the time I required their application, they adhered to my memory without the least act of my will to imprint them there, so that at the end of one month I could repeat them with great facility. I well recollect the triumph my master enjoyed over me in perceiving the success of his mode of teaching the principles of his language, for I had objected to it on the day I became his pupil.

I taught myself the Italian and Spanish languages so as to be able to read them both to this day (July 2d, 1800) with tolerable facility.

The second winter I spent in Edinburgh was employed in attending in addition to the before mentioned lectures those of Dr Gregory on the practice of physic and of Dr Hope on the *Materia Medica*. In June 1768, I was admitted to the degree of Doctor of Medicine, after having undergone the usual examination, and publicly defended a thesis on "the digestion of the food in the stomach."

The two years I spent in Edinburgh I consider as the most important in their influence on my character and conduct of any period of my life.

The public lectures and private conversations of the Professors not only gave me many new ideas, but opened my mind to enable me to profit by reading and observations.

JEAN ANTOINE CHAPTAL

A characteristic figure of the Revolutionary and Napoleonic periods in France is Jean Antoine Chaptal, physician, chemist, industrialist and politician. Chaptal received his medical degree at Montpellier, where he was deeply influenced by Philippe Pinel, famous for his reforms in the care of the mentally ill, and later taught chemistry there. From the very first, almost all his researches were devoted to manufacturing and industrial ends. Thus, he invented methods for the preparation of alum and saltpeter in quantities that could be utilized in industry, methods for dyeing cotton, for improving the manufacture of wine, and so on. Napoleon recognized the ability of this versatile man and appointed him to the post of Minister of the Interior. In 1801 Chaptal, together with other outstanding scientists, founded the *Société d'encouragement pour l'industrie nationale*, which stimulated researches in many fields that appeared to promise results of value for industry. His account of his medical education illustrates clearly the transitional period toward the end of the eighteenth century, just before the emergence of modern medicine in France.

THE choice of my profession could not remain in doubt. The example of my uncle, his love for a profession which he followed so honorably, the hope of succeeding him, the certainty of inheriting a respected name and a considerable fortune, all these made it my duty to devote myself to the study of medicine.

In consequence, in 1774, I registered at the school of Montpellier which at that time included among its professors the most enlightened men of the century, Leroy, Barthez, Venel, Gouan, Lamure. The teaching, however, was organized very poorly. Venel, an able chemist, taught hygiene, and all the chemistry that René gave us was to recite several pages of Macquer, Barthez taught anatomy, and Gouan gave lectures on materia medica. In short, no one was in his proper place. This evil arose from the circumstance that the competitors for the various classes were required indiscriminately to treat of medical subjects, with the result that a simple practitioner who applied for the chair of chemistry or of botany was thus more likely to obtain the votes of the school than some one who was not a physician. As a result, the practice of medicine was everything, chemistry and botany were only very subordinate ancillary subjects.

During the first year of my medical studies, I devoted myself particularly to the study of anatomy and botany. These two sciences had a very special attraction for me.

In the second year, I was able to prepare the specimens for the school under the direction of Laborie, a very able anatomical demonstrator, and at the end of the same year I read before the Royal Society of Sciences of Montpellier a memoir on physiology which yielded new conclusions.

A rather extraordinary occurrence, however, soon cooled my ardor for anatomy. At Montpellier the cadavers were insufficient for the needs of the amphitheatres and very often, it became necessary to suspend the course until the asylum was able to deliver them. It was this want of material for teaching which led me to become intimate with M. Fressines, chief surgeon of the Hôtel-Dieu, in order to work together with him in anatomy. One day Fressines came to tell me that a cadaver had just been delivered to his particular amphitheatre. We went there immediately, I found the body of a young man who had died four or five hours earlier of an inflammation of the lungs. I recognized this young man as having helped me pick up the balls when I was playing pall-mall, and this circumstance made me feel ill at ease. Nevertheless, I set about dissecting him, but at the first stroke of the scalpel on the cartilages that connect the ribs with the sternum, the cadaver placed the right hand on the heart, and the head moved feebly. The scalpel fell from my hands and I fled in fright. From this moment on, I abandoned the study of anatomy.

During my second year, I occupied myself with the study of physiology, this subject had attracted me and the learned lectures of Barthez maintained in me a passionate love for this subject. For six months during my third year, I made it my principal pursuit. The habit that I had acquired at Rodez of arguing and disputing on any subject gave me a preference for systems, and as the physics of the human body is the one among all the sciences which presents the fewest positive facts, I found myself in my element. I discussed pedantically and indifferently the pros and cons of all hypotheses. I maintained a continuous quarrel with all my comrades, and constantly maintained the contrary of their opinions. I would perhaps have persisted for a long time in this childish logic-chopping, had not two circumstances occurred which changed my scholastic attitudes and influenced my subsequent life to such an extent that I cannot omit them.

- The son of one of my friends, M. Coustou, had to defend his general theses at the college of Montpellier. He and his respected parents invited me to assist him, and I appeared there. The assembly was large and brilliant. At first I put some questions to the student, and praised him. But as he experienced some difficulty in replying to my arguments, his professor (M. Léger) expressed a desire to speak, and thenceforth there began a discussion between the latter and myself. I pressed him so hard and so energetically that he was soon silenced. Both the master and the pupil turned red with shame and I proclaimed their defeat. I did not long enjoy my little victory, for my natural feelings toward this respected family soon came to the fore again, and I felt myself devoured by regret for having humiliated them. This feeling of disgust with myself made me atone for a long time the trouble I had caused them.

About this time, I became friendly with M. Pinel (later famous at Paris), who, endowed with a sound and cultivated mind, nurtured on sound medical principles, had come to Montpellier to advance, under the supervision and

the example of the great masters, the fine studies that he had carried out at Toulouse. His enlightened inclination for observation, and his dislike of systems in medicine contrasted singularly with my way of looking at things and with my attitudes. We argued for a long time and without convincing each other. Finally, however, M. Pinel took a stand which could not but produce an effect on me. He advised me to give up for several months the study of authors who were occupied only with theory and explanation, and to consult only three authors, Hippocrates, Plutarch, and Montaigne. The reflective reading of these authors, which we often carried on in common, produced a revolution in me that I at first had regarded as impossible. I conceived such a passion for the study of these three philosophers that as a result of reading and meditating on them, I learned various chapters by heart. My conversion was complete. I developed a horror for hypotheses, and I recognized observation as the only guide for my studies in all that dealt with animal life. I recognized that the laws of life were not comprehended by mechanics, hydraulics, and chemistry, and that movements in living bodies depended on certain primitive laws of which it was necessary to study and compare the effects without searching for the causes. The laws of mechanics, hydraulics, and chemical affinity undoubtedly act on all matter, but in the animal economy, they are subordinated to the laws of vitality to such an extent that their effect is almost nil. And the more intense the vitality, the greater is the divergence of vital phenomena from the results calculated on the basis of these laws, so that their power is almost unfelt in the more highly developed animal functions.

Imbued with this doctrine, I applied it in my thesis for the baccalaureate which I presented toward the middle of the third year of my medical studies. I wished to develop the causes of the differences that are observed in men considered in their physical and moral aspects, and I divided this vast and noble subject into four parts. In the first, I endeavored to make known the differences that we bring with us at birth. This section, which was very difficult to handle because of the necessity for excluding all extraneous influences, required profound knowledge of the general laws of life. All the more did I apply myself to a presentation of these laws in their entirety so as to deduce from them the modifications which constitute the individual differences or constitutions. In the second part, I tried to indicate that which is due to education, which I considered in its effects on sensibility and physical mobility, as well as on imagination, reason and memory. In the third part, I examined the modifications which climates produce on all the vital faculties, and in the fourth, I sought to determine the influence of governments or of such political education as endows a nation with an individual character.

This voluminous thesis, written in Latin and defended in this language, and provided with all the examples that the writings of travelers, politicians, and philosophers had furnished me, created a great sensation.

Three months later I was admitted to the doctorate, but pursuing my

studies in the same direction, I soon felt that my bachelor's thesis was only a sketch. Every day my studies presented me with new facts which supported my principles, and one year later, I wrote a treatise on this subject in French. I gave my work to the Society of Sciences of Montpellier, of which I was already a member. The report, profoundly argued, was extremely favorable to me, and I was invited to offer it to the public. However, as I did not feel enough confidence in a work of this importance, and was of the opinion that such a vast subject could only be treated imperfectly by a young man of nineteen years, I put away the manuscript together with the report and restricted myself only to inscribing on the first page the date and the age at which it had been written. The work was stolen from me five or six years later.

1785 — 1852

DANIEL DRAKE

Medical education in the United States has passed through several distinct phases since colonial days. The first phase of its development consisted essentially of a period of apprenticeship, during which the aspiring young man studied with a chosen medical practitioner for some years. Individual physicians, such as Benjamin Rush or John Collins Warren (see page 59), went to Europe to supplement their training by studying at a foreign medical school. Later medical schools were established in America (Philadelphia, 1765, New York, 1768, Cambridge, 1783, etc.). It is against this general background that Daniel Drake's medical education must be viewed. At the age of fifteen, he was apprenticed to Dr. Goforth. In his preceptor's office he read the few medical books that were available: Cheselden's *Anatomy*, Haller's *Physiology*, and the writings of Boerhaave and van Swieten. As Dr. Goforth opposed the therapy employed by Benjamin Rush, he forbade his pupil to read any of Rush's works. Nevertheless, Drake secretly devoured the forbidden fruit, and made up his mind that he would see and hear Rush in person. After four years with his preceptor, Drake made his way to Philadelphia where he attended the medical school for five months.

AS MY letter to Sister B. was written on the anniversary of my arrival in Cincinnati, so this is begun (perhaps will be finished) on the anniversary of the commencement of my medical studies. Since that time forty-five years have rolled away, nearly seventeen more than you have lived in the world. Of course, the circumstances of my arrangements for, and entrance on, the new career (I had to look in the dictionary for the spelling of the last word, which will show you that I have not yet overcome the defects of the education with which I engaged in the study of my profession), I say, of course, the events of that time now rise dimly before me, when I throw my mind's eye back, as do the objects of a place from which we have departed, when we stop, turn round, and look back upon them. And still, there was much in the

plans, labors, and occurrences of that year, to impress its memories more deeply on my heart than those of any year before, or of any year since, except that in which I gained, and that in which I lost, your dear mother

The long talked of project—that of “making me a doctor”—had at length been finally settled in the affirmative, and I was to enter on the study in a few months with my cousin, Dr John Drake, whose education was then nearly completed, and whose genius was only equalled by his great moral purity With this prospect before me, he was taken ill in July with typhus fever, and died in August This was my first disappointment, and it was a real misfortune to me, for he would have been a good preceptor, and I could have studied at home, and thus saved father an expense which he was in no way prepared to meet He courageously persevered, however, in his cherished purpose, and I had to submit, although, on his account, I would have preferred being bound to a tradesman, and had actually selected a master, Mr Stout, of Lexington, a saddler, to whom some of my cornfield companions had already gone But my preparatory education was not yet completed True, I had learned to spell the words in old Dilworth, and a good proportion of those in Noah Webster, Jun , Esq , whose spelling-book then seemed to me a greater marvel than does at this time his quarto dictionary now lying before me But I must fall back upon A D 1800, and continue the catalogue of my accomplishments in literature As a reader I was equal to any in what I regarded as the highest perfection—a loud and tireless voice, which I am sure you would say still inheres with me, if you had been within a hundred yards of the Institute, during my lecture this morning In chirography I was so so, in geography obscure, and in history cypher In arithmetic, as far as the double rule of three, practice, tare and tret, interest, and even a fraction in decimals My greatest acquirement—that of which I was rather proud—was some knowledge of surveying, acquired from Love (I mean to name the author as well as my taste) but which I have long since forgotten Of grammar I knew nothing, and unfortunately there was no one within my reach who could teach it Limited as were my attainments, they exceeded that of many boys around me who knew much less, still, as I was going to be a doctor, it was decided that I must have another quarter's schooling Accordingly, father subscribed again to Master Smith, who kept in a log school-house, on the banks of the Shannon in the woods, just two miles west of where he lived Thirty-six years afterward, I visited the spot, and found the old hickory under which we used to play, quietly as ever casting off now and then his “shell-bark,” with a personal appearance exactly the same as he wore in my boyhood So I resumed my suspended school studies But the corn had to be hoed, and seeding time required the wheatfield to be harrowed after the sower, and the seed had to be covered with the hoe near the numerous stumps, and it was indispensable for me to labor with my hands as well as head So I had to rise at the dawn of day, and work in the field till breakfast time, then eat and start with my dinner in my hand As the distance was two miles, I had to use my feet as well as my head

and hands, and generally ran most of the way, as I do now in going to Dr Bayless' to breakfast. Indeed I have always had such a propensity for running, that it seems a marvel that I never ran away. But what did I do when I reached the consecrated log-cabin? Why, work among the hard words in Webster especially certain *outré* tables of monosyllables, and certain other tables of "words alike in sound, but different in signification and spelling", write, cypher, and read in Scott's *Lessons*. Meanwhile, other arrangements were being made for the life before me, such as knitting socks, making coarse India muslin shirts instead of tow linen, providing a couple of cotton pocket handkerchiefs, and purchasing a white roram hat (which to my great grief was stolen in less than a month after I reached Cincinnati). It was also necessary that father should make a visit to Dr Goforth before I should be taken down, as a bargain was to be concluded. But before this was undertaken, a serious calamity fell upon us. Either three or four (I forgot which) of the children, Sister Lizzy, Sister Lydia, Sister Lavinia, and your uncle Benjamin were all, about the same time, taken down with the ague and fever, a disease never known before or since at the place where we lived, and some of them, especially Sister Lydia continued with the disease for several weeks. In the midst of it, father got kicked by a horse on the instep of one of his feet, which became greatly inflamed, and a small spot mortified. This, of course, terminated my schooling. I well remember the cares, toils and anxieties of dear mother and myself, for every thing within and without now devolved upon us.

At last, when father had got well enough to travel, as the autumn was passing away, he determined to make his visit to the doctor. He was gone about a week, and suffered a good deal in his foot from its hanging down. When he got back, he announced that all was arranged, and that I was to go down before the setting in of winter. I was to live in the doctor's family, and he was to pay four hundred dollars, provided I remained, as it was expected I would, four years, by which time, I was to be transmuted into a doctor, as I should then be nineteen. My whole time, however, was not to be given up to the study of medicine, for the doctor was to send me to school for two quarters, that I might learn Latin. But it was sagely decided, that it was not to be done before I began the study of medicine, but at some future time. My destiny now began to be a neighborhood talk, and, indeed, excited a considerable sensation. It was decided that I was to be a gentleman, and lead a life of ease and gentility. I was already called "doctor" by some, and no one of the neighbors, old or young, passed me without having something to say about it. Some of them cautioned me against getting proud, and others, especially my good and venerable old uncle Cornelius, exhorted me to beware of bad young men and evil companions, of which he had understood there were a great many about Fort Washington, or "Cin," as it was sometimes called. Not a few of my young comrades were envious of me, and not a few of their mothers were in a similar plight in reference to mine, who showed such a proud disposition, in wishing to make a doctor of her son "Dannel." As to myself, I well

recollect that this period of preparation at home, and critical agitation abroad, was by no means very joyous. I was fond of study, but not passionately so, and if I had any aspirations, they were not intense, and several circumstances conspired to countervail them. 1st I had looked into the medical books of my cousin, and found them so learned, technical, and obscure, that I was convinced my education was too limited. 2d My father was too poor to pay for what he had undertaken, and was too ailing to dispense with my labours on the farm, now that I had got old enough to do half a man's work. 3d I was a great homebody, had never been out of the family more than a day or a night at a time, felt timid about going among strangers in a town, and mingling with "the quality." 4th, and finally, I was distressed at the idea of an absence of four or five months. At length, all arrangements were made, and the 16th of December was fixed on for my departure, but instead of starting on the journey I will start to bed, as I find it is after one o'clock. So good-night, or, rather, morning.

1795 — 1834

WENZEL KRIMER

Medical autobiographies may be divided into two basic categories: those that are of interest because of the personality of the writer, and those that interest the reader because of the external circumstances described. Although the autobiography of Wenzel Krimer partakes of both qualities, the former predominates. Krimer was born in 1795 at Datschitz in Moravia, where he spent his early years. In the preface to his memoirs, he promises to present frankly not only his good points, but also all his weaknesses, follies, errors and mistakes. The frankness and realism with which Krimer portrays his experiences in the gymnasium at the Neureusch monastery remind one of Rousseau. The major portion of Krimer's memoirs is concerned with his experiences as a member of Lutzow's Free Corps during the Napoleonic Wars in Germany. At the conclusion of war, he matriculated at Halle and eventually received his medical doctorate. In 1820 Krimer obtained an appointment to the medical faculty of Bonn, but unfulfilled promises, the death of his wife, and economic necessity led him to abandon an academic career and to move to Aachen where he achieved moderate success as a general practitioner. Here he died in November 1834, one year after the completion of his memoirs. The cause of death was a cancer of the oesophagus.

Krimer's medical contributions, while minor, deserve mention. Chief of these was the introduction of a first-aid pack for soldiers, consisting of two bandages, a cloth and a handful of lint. This pack, which was generally accepted by the German Army in 1869, was carried by the soldier in the lining of his hat. Noteworthy, too, is a report published in 1829 on several experiments to cure cases of pulmonary tuberculosis by means of surgical measures.

I WAS aware of my ignorance of painting, and tried, partly through reading, partly through instruction from a wretched dauber who painted pictures

of saints and sign-boards in oil, to learn so much about oil painting that at least I knew the colors, and how to mix and apply them. With this knowledge, I then set out to try my hand at oil-painting.

Hardly had the municipal physician, who was simultaneously physician, surgeon, obstetrician, barber and apothecary, and depending on circumstances anything else that brought in money and cost him nothing, learned of my efforts when he proposed that I equip his glasses, boxes, and pots with proper labels and paint a fine sign-board in oil for him. Because he had twice helped my mother when she had had attacks of blood-spitting, I was favorably inclined to this man, despite his dirty greed and his extremely suspicious chastity, and felt that I was deeply indebted to him. Agreeing to his request, I began to paint pharmaceutical names and symbols. With my knowledge of Latin, I easily understood them, and soon learned the symbols from an old pharmacopoeia. In less than three weeks, I was already acquainted with almost all the medicaments, not only with their names, but also with their properties and actions. This made the doctor so happy, that he proposed to me to become his apprentice and learn the barber surgeon's craft, there would be no fee. This was truly a generous proposal, but over which I had to laugh heartily at the learned gentleman.

The good man probably regarded barbering as the indispensable basis of all necessary knowledge. He had become a Brunonian, probably for the sake of convenience, and his library as well as his knowledge were patterned after this system. Quite often, he addressed me in a bombastic vein, mouthing such phrases as "ars longa vita brevis," "judicium difficile est," and so forth. I wanted to know if there was really anything behind all this, and began a long sermon in Latin on Plato's Timaeus, Hippocratic medicine, Aesculapius, Hygeia and the like, just what I happened to know. The doctor shifted uneasily in his chair, cleared his throat, picked at his cuffs, and finally broke out "Oh, your Latin and Greek—the main thing is, practice—with Latin you can't even cure a cat." Thereupon, I asked quite frankly, in German, how it was possible to write prescriptions without a knowledge of Latin? "Now," he replied, "that is easy. All one needs is to know the names of the medicaments by heart, and not to make any mistakes in *Casu verborum*, but then, that is why abbreviations have been introduced in prescription writing. And where one does not know how to help himself otherwise, one writes either extremely illegibly or prepares the medicine himself without a prescription."

Now, I thought, this is capital, the whole business is child's play. In fact, you can write a prescription which will be more correct linguistically than that of the doctor, furthermore, two of your uncles are also doctors. With your knowledge you can do at least as well as this *ignoramus*, who nevertheless lives so well!—I turned these thoughts over in my mind, and in order to obtain some idea of the nature of medicine, I asked him to loan me a good medical book. Very naturally, he took out the book that represented his high-

est ideal of medical wisdom, namely, Roschlaub's *Pathogenie*. Within eight days I had completely mastered the contents, talked long-windedly about chemistry and asthenia like a man of learning, and looked upon myself as a complete physician who needed nothing else but the title of doctor, patients and Roschlaub's table, in order to determine from it the degree of the disease, like a merchant marking the value of his goods from the current price quotations, and to strengthen or weaken it.

The matter appeared to me to be so very easy that I quickly decided to become a doctor, and communicated this intention to my parents, who had no objection. Not far from my native city, in Neuhaus, my uncle was stationed as the physician in charge of military hospital No. 32. He was asked to take me as a probationer, this he did and so as a fourteen-year-old boy, I was turned in a few days from a rowdyish schoolboy into an Imperial and Royal Military Medical Probationer with a uniform and a sword.

1798 — 1859

WILLIAM A. ALCOTT

The early part of the nineteenth century saw in the United States the rise and decline of an important popular health movement which laid great stress on dietary reform. This movement was headed by Sylvester Graham, that the diet-reform movement left a lasting impress is shown by the designation in the United States of bread and crackers made from whole wheat flour as graham products. One of the foremost of Graham's advocates was William A. Alcott.

Born in 1798 at Wolcott, Connecticut, as the son of a farmer, Alcott received the usual education of a country boy. He became a wide reader at an early age and later a voluminous writer. Early in life Alcott also developed certain beliefs that he retained throughout his career. He became convinced of the need for co-operative organizations, and believed in the great value of popular education as the key to a perfect social organization. (In this connection it is noteworthy that William Alcott was the cousin of Bronson Alcott, father of Louisa May Alcott, who so greatly influenced the New England Transcendentalist Movement.)

Before studying medicine, Alcott became a schoolmaster and taught for a time. Illness turned his mind to medicine, and he attached himself to a local practitioner for two years. This was followed by a year at the Medical Institution of Yale College from which Alcott graduated in 1826, with a thesis on *Pulmonary Consumption, especially means of preventing it*, that illustrates his abiding interest in the prevention of disease. Following graduation, he entered upon a country practice, but soon abandoned it to assist William Channing Woodbridge in operating a school on the principles of Pestalozzi. It was at this time that he wrote a classic *Essay on the Construction of School Houses*. In 1831 Alcott moved to Boston, where he tried to introduce into schools and to the population at large the teaching of anatomy and physiology to serve as the basis of a rational system of hygienic living. By 1836 he was well established as a health educator. At this point in his

career, Sylvester Graham came to lecture in Boston. The two men met, and Alcott became a champion of Graham's doctrines. He pointed out, however, that these were only a small part of a complete system of physiological living. Alcott also helped to found the American Physiological Society in 1837, of which he became president. Later, the paths of Graham and Alcott separated. William Alcott was a penman of no mean stature, and from his pen poured a long series of books, tracts, articles and letters dealing with physiology, health of children, home remedies, cookery and domestic economy, the evils of intemperance, and physical education. His last book, *Forty Years in the Wilderness of Pills and Powders*, an autobiography, appeared after his death in 1859.

MY THOUGHTS were now directed with considerable earnestness and seriousness, to the study of medicine. It is true that I was already in the twenty-fourth year of my age, and that the statute law of the State in which I was a resident required three years of study before receiving a license to practise medicine and surgery, and I should hence be in my twenty-seventh or twenty-eighth year before I could enter actively and responsibly upon the duties of my profession, which would be rather late in life. Besides, I had become quite enamored of another profession, much better adapted to my slender pecuniary means than the study of a new one.

However, I revolved the subject in my mind, till at length, as I thought, I saw my path clearly. It was my undoubted duty to pursue the study of medicine. Still, there were difficulties which to any but men of decision of character were not easily got removed. Shall I tell you how they were gradually and successfully overcome?

Our family physician had an old skeleton, and a small volume of anatomy of Cheselden, as well as somewhat more extended British work on anatomy and physiology, all these he kindly offered to lend me. Then he would permit me to study with him, or at least occasionally recite to him, which would answer the letter of the law. Then, again, I could, during the winter of each year of study except the last, teach school, and thus add to my pecuniary means of support. And lastly, my father would board me whenever I was not teaching, and on as long a credit as I desired. Were not, then, all my difficulties practically overcome, at least prospectively?

It was early in the spring of the year 1822 that I carried to my father's house an old dirty skeleton and some musty books, and commenced the study of medicine and surgery, or at least of those studies which are deemed a necessary preparation. It was rather dry business at first, but I soon became very much interested in the study of physiology, and made considerable progress. My connection with our physician proved to be merely nominal, as I seldom found him ready to hear a recitation. Besides, my course of study was rather desultory, not to say irregular.

In the autumn of 1824, having occasion to teach school at such a distance as rendered it almost impracticable for me to continue my former connection as a student, I made arrangements for studying with another physician on

terms not unlike those in the former case. My new teacher, however, occasionally heard me recite, especially in what is properly called the practice of medicine and in surgery. His instructions, though very infrequent, were of service to me.

In 1825 I became a boarder in his family, where I remained about a year. Here I had an opportunity to consult and even study the various standard authors in the several departments which are usually regarded as belonging to a course of medical study. So that if I was not in due time properly qualified to "practise medicine and surgery in this or any other country," the fault was chiefly my own.

However, in the spring of 1825, after I had attended a five month's course of lectures in one of the most famous medical colleges of the Northern States, I was regularly examined and duly licensed. How well qualified I was supposed to be, did not exactly appear. It was marvellous that I succeeded at all, for I had labored much on the farm during the three years, had taught school every winter and two summers, had two or three seasons of sickness, besides a severe attack of influenza (this, you know, is not regarded as a disease by many) while attending lectures, which confined me a week or more. And yet one of my fellow students, who was present at the examination, laughed at my studied accuracy!

One word about my thesis, or dissertation. It was customary at the college where I heard lectures—as it probably is at all others of the kind—to require each candidate for medical license to read before the board, prior to his examination, an original dissertation on some topic connected with his professional studies. The topic I selected was pulmonary consumption, especially, the means of preventing it. It was, as may be conjectured, a slight departure from the ordinary routine, but was characteristic of the writer's mind, prevention being then, as it still is, and probably always will be, with him a favorite idea. I go so far, even, as to insist that it should be the favorite idea of every medical man, from the beginning to the end of his career. "The best part of the medical art is the art of avoiding pain," was the motto for many years of the *Boston Medical Intelligence*, and it embraced a most important truth. When will it be fully and practically received?

1805 — 1884

SAMUEL D. GROSS

To judge from the evidence of medical autobiographies, most doctors do not start out to study medicine because of a true vocation. In most cases, it seems that the decision is influenced by a considerable element of chance. Some few there are, however, who from the very beginning really and truly want to be healers. One of these was Samuel Gross, a native of Pennsylvania, descended from Rhenish

German immigrants who had settled there in the eighteenth century. He tells us that he was only a small boy when he first expressed a desire to become a doctor. But before Gross could realize his wish, it was necessary for him to complete his education, especially in English, Latin, and Greek. At the age of seventeen, he began to study medicine in the office of a practicing physician, as was customary at the time. But it was not until Gross had had several unsatisfactory experiences with various preceptors, that he eventually entered Jefferson Medical College in Philadelphia, where he graduated in 1827.

Born in Easton, Pennsylvania, he began the study of medicine there under Dr. Joseph K. Swift. After graduating from Jefferson Medical College, Gross began to practice in Philadelphia, but after eighteen months he had to admit defeat. Returning to Easton, he met with an equal lack of success. In 1833, however, Gross received an appointment as demonstrator of anatomy in the Medical College of Ohio at Cincinnati. Although his connection with the school lasted only two years, he remained in Cincinnati for ten years and acquired a large practice.

Gross taught in medical schools at Louisville, New York and finally, Philadelphia, where, in 1856, he became professor of surgery at the Jefferson Medical College. He remained in Philadelphia until 1882 when he resigned from his professorship.

Gross was a man of many interests, and a voluminous writer. In large measure, it was due to his efforts that American surgery began to be respected in Europe. Among his more notable contributions to medical literature are his systematic treatise on pathological anatomy, which met with a favorable reception both in America and Europe, and his system of surgery which became a standard work on the subject. In addition, Gross was interested in medical history, and in 1861 edited a biographical encyclopedia, entitled *Lives of Eminent American Physicians and Surgeons of the Nineteenth Century*. A profound believer in the usefulness of professional organization, he organized the American Surgical Association in 1880, and served as the president of various other medical societies and congresses. Gross had the unique distinction of receiving honorary degrees from Oxford, Cambridge and Edinburgh. His *Autobiography*, published in 1887, is the chief source of information on his career.

LEAVING my uncle in my fifteenth year, I went back to my mother, and bethought me of some useful occupation during the rest of my life. Various suggestions were made to me, but none were sufficiently enticing to induce me to adopt them. I had had from my earliest childhood the strongest desire to be a "doctor." How that feeling was engendered I have never been able to explain. Perhaps it was from seeing occasionally a physician at my father's house in times of sickness. However this may have been, this desire had seized me before I was six years of age, and continued to haunt me more or less until I was able to gratify it. There are natural-born poets, and, if there ever was a natural-born doctor, I was that one. The impulse was too strong to be resisted. My views of life now became somewhat settled, and, as my education was still very defective, I at once began to remedy it. I had made considerable progress in the study of the German language, I had read quite a number of

books, and was able to write German with some ability. My English had been neglected, and I therefore determined to take up the language systematically. I also, in due time, commenced the study of the Latin language. My progress, however, was not rapid in either. I had been brought up in a German settlement, and therefore knew practically little of English. This was a serious impediment, and it cost me much labor and trouble to surmount it. Then, again, my early teachers were themselves indifferent English scholars, and my progress would have been still less if I had not by this time become thoroughly impressed with the necessity of self-reliance and hard work. I labored diligently at my books, and made considerable progress in reading, composition, and arithmetic. Latin dragged heavily along, and as yet I had not attempted Greek. Indeed, there was no one in the neighborhood who had much acquaintance with the classics.

At the age of seventeen I considered myself competent to commence the study of medicine, and I accordingly entered the office of a country physician, but he afforded me no aid, and I therefore soon quit him and tried another, with no better luck. They had none but old, if not obsolete books, they were constantly away from home, never examined me, or gave me any encouragement. With the aid of Fyfe's Anatomy and a skeleton, I learned some osteology, but even this was up-hill business, and I at length gave up in despair. I found that my Latin was inadequate, and that I could not understand the technicalities of medicine without some knowledge of Greek. With some degree of hesitancy, lest I should give offence, I disclosed my feelings to my preceptor, and, much to his honor, he at once released me from any obligations to serve out my term of study. *This was the turning-point in my life.* I had pondered the matter with much care, it had worried and fretted me for days and nights, and, as I was naturally very diffident, it required all the courage I could summon to make known my wishes. The promptness with which they were seconded gave me much relief that I once more drew a long and comfortable breath. I had made a great discovery—a knowledge of my ignorance, and with it came a solemn determination to remedy it.

The school which I selected was the Academy at Wilkesbarre, famous in its day for the large number of its pupils, and at the time under the charge of Mr., afterwards Judge, Joel Jones, a graduate of Yale College, a gentleman of great kindness of heart, a good linguist and an excellent teacher. He was assisted by a brother, Mr. Samuel Jones, who was afterwards for many years the principal of a celebrated classical school in Philadelphia. I lost no time in beginning my studies. Latin, English grammar, mathematics, and Greek formed my daily occupation, and no youth ever worked harder than I to acquire knowledge. I generally slept with a book under my pillow, especially if I had anything to commit to memory. My progress was commendable. Still I had a fearful task before me in Buttmann's Greek Grammar, as it was entirely too large and difficult for a beginner. However, I succeeded in mastering a good portion of it, and was able to apply a considerable number of

its rules This grammar had just been introduced to the American student, through a translation by the late Edward Everett, made soon after his return from Europe, while tutor at Harvard University My Latin grammar was that of Adam, rector of the High School at Edinburgh, it was too voluminous a book for a beginner, but, nevertheless, a most excellent one, which held its position for a long time in the affections of the European and American student My English grammar was an abridgment of Lindley Murray's, for a long time the only grammar used in this country Within the last forty years great changes have taken place in school-books, not perhaps always for the best, although in many instances the gain, by simplifying the process of teaching, has been vast The only Greek lexicon in my school-days was Schrevelius's which, as the definitions were all in Latin, few pupils could master The labor thoroughly disgusted me, and the consequence was that I never had any love for the Greek language To understand Latin was hard enough, but to study Greek through such a medium was positively absurd, nay, more, an insult to common-sense and an outrage upon human nature Ross's Greek Grammar, used in some of the schools and colleges in the country, was constructed upon the same principle, and yet it maintained its place as a text-book for many years To study Greek with such agencies was a severe task as for an ox to tread out corn I never think of it without a shudder, and wonder that teachers could ever have been so foolish I had become a graduate in medicine when I saw for the first time, upon the counter of a New York bookseller, a copy of Groves's Greek and English Lexicon, then recently published This was in the autumn of 1828 I welcomed the book as the harbinger of a new era in educational progress, the reign of Ross and Schrevelius was soon over, and the study of the Greek language became a comparatively easy task

I was nineteen years of age when I commenced in earnest the study of medicine My preceptor was Dr Joseph K Swift, of Easton, a graduate of the University of Pennsylvania, and a practitioner of some note, with considerable pretension to scientific knowledge and a deadly hatred of quackery The understanding was that I was to remain under his tuition for three years, inclusive of two lecture terms, and that he was to receive, as an office fee, two hundred dollars, for which he was to furnish me with the use of certain books, and to examine me once a week on such branches as I might be studying His library was small, and its contents of little value He had no apparatus of any kind, plates or diagrams, no specimens in materia medica, or anatomical preparations, nothing, in short, but a skeleton, and thus, with the aid of Wistar's Anatomy, was the first thing I set about to master In less than two months I had accomplished my object, I knew pretty well every foramen, prominence, and suture, and was complimented upon my progress I then went to the ligaments and muscles, and at length to the viscera, and of course learned but little From anatomy I went to surgery, then to materia medica, and finally to midwifery and the practice of medicine The works on these sub-

jects that were put into my hands were Dorsey's *Elements of Surgery*, Chapman's *Materia Medica and Therapeutics*, Burns's *Midwifery*, edited by James, and Thomas's *Practice*, edited by Hosack. Chemistry I did not study, being told that it could not be learned out of the lecture-room without the aid of experiments, and no assertion, I am sure, is more true. I was generally examined on Saturday, and it is due to preceptor and pupil to say that they were always punctually at their post. From an hour to an hour and a half was usually consumed in this way, the book which I was engaged in reading being always spread out on the table before my "master." I need not say that this was a dry and unprofitable mode of studying medicine, it was acquiring knowledge under difficulties, it was a waste of precious time, and I was therefore glad when the period arrived for attending lectures. I was eager for a new field, where I might obtain some substantial information, and some remuneration for my pains. I had all along felt that like Sisyphus, I was engaged in rolling stones up hill, and doing myself no good beyond the slight reputation I gained as a devoted student. Besides, I had seen no practice, my preceptor was not popular, and few of his patients could be visited by an "unfledged doctor." Swift, I am sure, took an interest in me, but it soon became apparent to me that such instruction as I was receiving from him had little value, and fell far short of what a student had a right to expect from his preceptor. Perhaps, however, this was not his fault, but the fault of the vicious system of office pupilage, still prevalent in nearly all sections of this country, a system which cannot be too pointedly condemned, and concerning which I shall have more to say.

Swift was anxious that I should attend lectures in the University of Pennsylvania, his Alma Mater, and accordingly gave me letters to Professors Dewees and Horner, the former of whom was a relative by marriage of Mrs. Swift. I had, however, heard so much of the brilliant achievements of Dr. George McClellan, Professor of Surgery in the Jefferson Medical College, then recently founded, that I made up my mind to disregard his wishes and to matriculate in the "new school," as it was called. I therefore did not deliver Swift's letters. I became at the same time a private pupil of McClellan, and never reentered Swift's office, although I had paid him his full fee when I left Easton. This, I believe, gave offence.

1809 — 1894

OLIVER WENDELL HOLMES

The element of dedication, so evident in the case of Samuel Gross, is almost completely lacking in the medical career of Oliver Wendell Holmes, the wit of Beacon Street. Literature was really his first love, and remained so throughout his life. "The intoxicating pleasure of authorship" played a part in Holmes's decision to

give up law and study medicine Vernon Parrington remarked that "In his literary work Holmes was always the talker rather than the writer", the truth of this comment is nowhere more evident than in the following letter telling how he came to study medicine

LET me begin with my first experience as a medical student I had come from the lessons of Judge Story and Mr Ashmun in the Law School at Cambridge I had been busy, more or less, with the pages of Blackstone and Chitty, and other text-books of the first year of legal study More or less, I say, but I am afraid it was less rather than more For during that year I first tasted the intoxicating pleasure of authorship A college periodical, conducted by friends of mine, still undergraduates, tempted me into print, and there is no form of lead-poisoning which more rapidly and thoroughly pervades the blood and bones and marrow than that which reaches the young author through mental contact with typemetal *Qui a bu, bona*—he who has once been a drinker will drink again, says the French proverb So the man or woman who has tasted type is sure to return to his old indulgence sooner or later In that fatal year I had my first attack of author's lead-poisoning, and I have never got quite rid of it from that day to this But for that I might have applied myself more diligently to my legal studies, and carried a green bag in place of a stethoscope and a thermometer up to the present day

What determined me to give up law and apply myself to medicine I can hardly say, but I had from the first looked upon that year's study as an experiment At any rate, I made the change, and soon found myself introduced to new scenes and new companionships

At the end of the first year in the Dane Law School, I took up the new study which was to be my final choice There is something very solemn and depressing about the first entrance upon the study of medicine The white faces of the sick that fill the long row of beds in the hospital wards saddened me, and produced a feeling of awe-stricken sympathy The dreadful scenes in the operating theatre—for this was before the days of ether—were a great shock to my sensibilities, though I did not faint, as students occasionally do When I first entered the room where medical students were seated at a table with a skeleton hanging over it, and bones lying about, I was deeply impressed, and more disposed to moralize upon mortality than to take up the task in osteology which lay before me It took but a short time to wear off this earliest impression I had my way in the world to make, and meant to follow it faithfully I soon found an interest in matters which at the outset seemed uninviting and repulsive, and after the first difficulties and repugnance were overcome, I began to enjoy my new acquisition of knowledge

The head of the private school at which I studied was Dr James Jackson, a very wise and a very good man, whose influence on the minds of the students who followed him in his visits to the hospital, and who listened to his teaching as professor, was of the soundest and best character Dr Jack-

son never talked of *curing* a patient except in its true etymological sense of *taking care* of him I think we may say, in general, that the doctor who talks of curing his patients belongs to that class of practitioners known in our common speech as "quacks" It is in medicine as in surgery,—nature heals, art helps, if she can, sometimes hinders, with the best intentions, oftener is entirely ignored by the great remedial agencies ordained by the shaping intelligence which gives form and life to mortal organization

1813 — 1883

J MARION SIMS

Quite unlike Samuel Gross, whom he otherwise resembled in so many circumstances, Marion Sims drifted into medicine without enthusiasm His father, who wanted his son to become a lawyer, had made great financial sacrifices to give him a college education Sims's mother wanted him to be a preacher He himself would have preferred to go into business, but to have done so would have meant to disgrace his family As a result there was nothing left for him to do but to select one of the professions, and Sims chose medicine Following the customary practice, he began his studies with a private preceptor, then went to medical school in Charleston and Philadelphia, graduating from the latter place in 1835

ANOTHER great source of unhappiness to me was the fact that my father would be disappointed in me I knew very well that he had educated me with the view of studying law My mother hoped that I would study divinity and go into the Presbyterian ministry My mother never knew the disappointment that awaited her, for she died two months before I left college Knowing how great my father's disappointment would be, I did not dare to speak to him on the subject of studying a profession, and I waited for him to speak to me He was very kind in allowing me a whole month's vacation, with nothing to do I grew very tired, and kept wishing every day that father would say something to me about going to work

At last he said to me one day, "Come, my boy, is it not time that you were buckling down to professional studies?" I replied, "Yes, I have been thinking of it for some time" I have been asked many times why I studied medicine There was no premonition of the traits of a doctor in my career as a youngster, but it was simply in this way

At that day and time, the only avenues open to a young man of university education were those of the learned professions A graduate of a college had either to become a lawyer, go into the church, or to be a doctor I would not be a lawyer, I could not be a minister, and there was nothing left for me to do but to be a doctor—to study medicine or to disgrace my family, for it was generally thought that a man who had gone through college, and came back and settled down as a merchant's clerk, couldn't have had much in him if he

didn't take to a profession So there was nothing else left for me but to study medicine One day my father said, "I guess you had better go down and see Mr Howard about your beginning your studies with him"

I said "Father, I know that I have been a great disappointment to you I knew from the outset that you wanted me to become a lawyer It is impossible for me to be a lawyer, I have neither the talent nor the gifts necessary for the profession I cannot enter Mr Howard's office" He said "What in the world are you going to do, then?"

I said "If I hadn't gone to college I know what I should have done I would have accepted Mr Stringfellow's offer of three hundred dollars a year, and gone into his store two years ago, and by this time I should be getting five hundred dollars a year But as it is, I suppose I must study a profession, so long as I have had a university education, and there is nothing else left for me but the study of medicine, if I *must* take a profession"

He said to me "My son, I confess that I am disappointed in you, and if I had known this I certainly should not have sent you to college"

I replied "I did not want to go, I knew that you were not able to send me there, and I knew that you would be disappointed, and that I should make you unhappy I am sure that you are no more unhappy about it than I am now But if I must study a profession, there is nothing left for me to do but to study medicine"

He replied "Well, I suppose that I can not control you, but it is a profession for which I have the utmost contempt There is no science in it There is no honor to be achieved in it, no reputation to be made, and to think that *my* son should be going around from house to house through this country, with a box of pills in one hand and a squirt in the other, to ameliorate human suffering, is a thought I never supposed I should have to contemplate"

However, he told me to go and see Dr Churchill Jones, and make arrangements to study medicine The next morning, I felt happily relieved at having been enabled to pass through that terrible ordeal with my poor disappointed father I began immediately to read medicine with Dr Jones Dr Churchill Jones was a man of very great ability The people in the country around had very great respect for and confidence in him as a physician But, unfortunately, he drank That, for a time, seemed to unfit him for the duties of his profession Besides, he had no facilities for medical instruction, for he had few or no books, and I read anatomy, read the practice, and all the medical books I could get hold of, without any teacher, or reading to any profit whatever I was very glad when I was able to leave his office, and go to attend medical lectures But he was a very great surgeon, and from him I imbibed a desire to distinguish myself in surgery, if I ever should become a doctor

In Jefferson Medical College, and a great gun, was the famous McClellan He was a great surgeon, and he was a *man* as well He was very eccentric and erratic as a teacher His delivery was very spasmodic, but he talked sense all

the time Not that he had much system, but whatever he said was to the point, it was practical—it was *teaching*—it was a thing that one could carry home and remember always At the time I was a student in Jefferson College, the distinguished General George B McClellan was a little boy, four or five years old I have often reminded him of the time, which he could not remember I used to pat him on the head, and give him six-pences to buy ginger-bread and taffy with

Professor McClellan frequently honored me by an invitation to assist him in surgical operations, and I remember one very remarkable case on which he operated It created a great sensation at the time It was a case in which he exsected a portion of a necrosed rib, without injury to the pleural cavity He talked to the patient all the time of his operation, for it was before the days of anaesthetics, and when it required great nerve to be a good surgeon He would gouge and chisel and work away, and say to the man, "Courage, my brave fellow, courage, we wound but to heal It will soon be over " Then he would work away again, and again he would cheer up the patient, by saying, "Courage, my good fellow, be brave, for we wound but to heal, it will soon be over Courage, my dear fellow, it will soon be over "

He was a great teacher, a great surgeon, and a great man, and he was the founder of Jefferson Medical College He died comparatively young, and left a reputation that is imperishable

In 1847 McClellan left home one bright May morning to make his daily rounds He walked erect along Chestnut Street, seemingly full of health and vigor, going from house to house to see his patients, while his coachman drove leisurely along, waiting wherever his master entered Soon he was seen slowly descending the steps of a marble mansion bent over with agonizing pain He entered his carriage and was driven rapidly home His medical advisers were summoned In a few hours he was in collapse, and in sixteen he was dead

He died of perforation of the bowel just below the sigmoid flexure The cause of death was septicaemia and shock And thus passed away one of the great surgeons of the age

Professor Patterson was the best lecturer on anatomy then living The next best to him was Hurlburt, of the Charleston College It made no odds what the subject was, the student was always chained to it as long as he chose to speak We never tired of his enthusiasm or his eloquence He had one very bad habit, a dreadful peculiarity and a disagreeable one, especially for those who occupied the front seats When he became very enthusiastic, and went to the highest pitch of his eloquence, he would forget himself and all around him, and would splutter and slobber and spit, the saliva flying in every direction, so that those who sat within a yard of him would be spattered all over Of course the young gentlemen were too polite to say anything, and they would wipe off the drops from their faces when he was so earnestly teaching them and so eloquently discoursing to them Every man in whose face he

would happen to splutter his saliva would watch, before he passed the amphitheatre, before raising his handkerchief to wipe it off

Patterson was very kind to the students, and always managed to help them out of their scrapes. He lent them money, and patronized them in every way that he could. He was a father to the students, and sympathized with them in all their efforts.

I graduated from the Jefferson Medical College in Philadelphia, on the first day of March, 1835. I studied very hard all winter, and even found time for the dissection of a few subjects. Few students found time for dissection during the graduating course, but I did and heard the graduating course of lectures besides. When I graduated, I felt absolutely incompetent to assume the duties of a practitioner. Professor Patterson had advertised a private course of lectures for a month, and I, with thirty or forty others, young men like myself, who felt that they didn't know much, concluded to take the private course. He delivered a course on "Regional Anatomy and Surgical Anatomy." When I graduated I presume I could have gone into the dissecting-room and cut down upon any artery, and put a ligature around it, but I knew nothing at all about the practice of medicine.

1814 — 1899

JAMES PAGET

At the end of a long life of achievement, James Paget is reported to have said "There is no true success without work." Nowhere is the essential truth of this statement better exemplified than in the life and work of James Paget himself. Born at Yarmouth, England, as the son of a prosperous shipowner and brewer, he received a fair elementary education. By the time he was thirteen, however, increasing financial difficulties led to a curtailment of his education, and in 1830 he was apprenticed for five years to a local practitioner. At the age of twenty, Paget entered St. Bartholomew's Hospital, where as a first year student he discovered *Trichina spiralis*, the worm that causes trichinosis.

After graduating and receiving his license, Paget settled in London. During this period he had to depend for a living on journalistic work (see page 399), and on a position as curator of the hospital museum. It was at this time that he rewrote the catalogue of the museum of the Royal College of Surgeons, an undertaking which took seven years. In 1843 he was appointed Warden of the medical students, and Lecturer on Physiology. Paget's lectures on physiology were used by W. S. Kirkes, one of his students, as the basis of a *Handbook of Physiology* (Kirkes's textbook, later known as "Halliburton's" was in its 37th edition in 1942.)

Meanwhile, Paget carried on a practice as a surgeon. He was made assistant surgeon to St. Bartholomew's in 1847, and full surgeon in 1861. His forte, however, was diagnosis, not operative technique. It was commonly said that a patient ought to "go to Paget to find out what was the matter, and then to Fergusson to have it cut out." Although hard put to it to make ends meet in his early years, Paget

eventually had an extremely lucrative practice, earning at times as much as £10,000 a year. During his active career he was a very hard worker, putting in about sixteen hours a day. Besides finding *Trichina*, Paget also described two diseases that have been named after him: cancer of the nipple, described in 1873, and a disease of the bones caused by a disturbance of calcium metabolism, reported in 1876.

In 1871 he was created a baronet by Queen Victoria, and in the same year retired from active hospital service. He continued to have a busy consulting practice until 1888. Paget died in 1899, and his funeral service was held in Westminster Abbey. Among his other writings, he left an unfinished autobiography, which was edited by Stephen Paget, one of his sons, and published in 1901 as *Memoirs and Letters of Sir James Paget*.

WHEN the intention to enter the Navy was abandoned, it was decided that I should be a "Surgeon"—meaning a general practitioner, or something in the Medical Profession—and that to this end I should be apprenticed to Mr Charles Costerton, an active, energetic, and well-educated practitioner in the town. So, in the ordinary manner of the time, the deed of Apprenticeship to learn the art and mystery of a Surgeon and Apothecary was drawn up, and after the payment of a premium of 100 guineas was duly executed, on the 9th of March, 1830. The term of apprenticeship then required by the Society of Apothecaries was 5 years, but at the end of four and a half I was to be allowed to go to hospital-study in London.

I cannot doubt that the period thus spent was too long. The first year of it might have been more usefully spent in some good school, the last in a London hospital, but the advantages of an apprenticeship were, or at least might be, far greater than is now commonly supposed. Many things of great utility in after-life could be thoroughly learned, things of which the ignorance is now a frequent hindrance to success, such as dispensing, and a practical knowledge of medicine, and the modes of making them, account-keeping, the business-like habits needed for practice, care and neatness and cleanliness in all minor surgery. Besides, in most cases, as in my own, the elements of anatomy could be slowly learned, there was time for reading and for natural history or any branch of science by which the habit of observing might be gained, and there was ample opportunity for observation in practice, without being confused in a crowd of cases in which it is, for a student, equally difficult either to study the whole or to make a good choice.

The necessary daily work was dull, and at times tedious and apparently useless. One had to be in the surgery from about 9 to 1, and again (I think) from 2 or 3 to 5 or 6, every day, and there one's time was chiefly occupied in dispensing, seeing a few out-patients, as they might be called, of the poorer classes, in receiving messages, making appointments, keeping accounts, and at Christmastime making out bills, and, for some, receiving payment. When the master came in from his rounds of visits, one had to write, at his dictation, for each day—*Die Lunae*, *Die Martis*, *Die Jovis*, or whatever god it might

be—the name of each patient he had seen, the fact of the *Visitatio*, and the prescription for the medicines required. Then these were to be made-up and sent, the bottles to be neatly corked and covered, the pills to be duly rolled and smoothly rounded (no silvering them), the leeches to be put in their boxes with scarcely struggling-room, and all to look as neat as from any druggist's shop. And from this book were duly entered in another the supplies of time and physic, and the cost of each, for each patient. I was taught and soon learned to do all this by Mr Costerton himself. The succession of apprentices which he, like other good practitioners, usually had, was by chance interrupted. But for this, my first teacher would have been one of my seniors.

Among the out-patients (as I have called them) were ulcerated legs, useful for bandaging, and coughs and colds, and occasional slight injuries, and not a few, especially women, who came to be bled. For at that time there were not a few, especially among the country working-people, who deemed bleeding once or twice a year a great safeguard, or a help to health. They came frequently on market-days at the times of spring and fall, and generally did their day's work in the market and then walked to the surgery. There they were at once bled, and usually were bled till they fainted, or felt faint and became pale, then a pad was put over the wounded vein, and a bandage round the elbow, and they went home, often driving three or four miles into the country. I have no recollection of any evidence that either good or harm was ever done by this practice.

Certainly I enjoyed these opportunities, and Mr Costerton, a kind and helpful master, though hot-tempered and sometimes very indiscreet, encouraged me to use them well. He had been a pupil at St Bartholomew's, and, for better study of anatomy, had dissected under Mr Joshua Brookes, a renowned private teacher—a 'grinder' who, I believe, really taught anatomy far better than did the teachers in the Hospital-schools. With this help, I learned slowly the anatomy of the bones, and dissected some of the internal organs, and some portions of amputated limbs. Besides, in my second year I was able to attend a course of lectures on the bones, given by Mr Randall, a young surgeon who had then just settled for practice at the village of Acle, about ten miles from Yarmouth. They were given in a room at the Angel Inn in the market-place, the class consisting of some six or eight pupils of surgeons in the town. I have full notes of them, and as I read them now they seem at least as good as could have been derived from any demonstrations or lectures on anatomy in a first-year's study in a London school at that time.

The work that I was able to do in anatomy, helped as it was by reading, however discursive, gave me, I think, nearly as much knowledge of it as most students now have at the end of their first year at Hospital-study. And I gained, I think, a much better knowledge of practice in medicine and surgery than they do in their first two years. For I saw many cases, both among private patients and in the gaol and some schools to which Mr Costerton was

surgeon I have notes of some of these, and though they seem now like pieces of far distant history, yet they are enough to show that I was learning to observe, and was being taught to look closely into different methods of treatment I saw, also, many operations done by different surgeons in the town, for I was generally invited to them, and some were well and some very ill done, and my master, who had good operative skill, taught me all he could in his criticisms of them

I read, I believe, the whole of Mason Good's 'Study of Medicine' and all Cullen's 'Practice of Physic,' and much of his 'Materia Medica' I read, also, the courses of lectures by Abernethy, Astley Cooper, and Lawrence, published in the 'Lancet,' and Thompson's 'Lectures on Inflammation', all the papers in the 'Cyclopaedia of Medicine,' then in course of publication, all the current numbers of the 'Lancet,' and many more books, from which, probably, I learned little more than the art of reading quickly

Among the chief events in the time of my apprenticeship was the first epidemic of Asiatic cholera, that of 1832 It was believed to have been brought to Yarmouth by sailors from Newcastle, and was severe I saw many cases of it, and saw them vainly treated—some with bleeding, some with calomel and opium, some with saline injections into the veins—all uselessly, though I can still remember the surprising and misleading revival of a woman who, while the saline injection was going-on, was roused from an apparently impending death in the cold blue collapse, and sat up and talked, and for an hour or two seemed quite revived I worked hard in the epidemic, seeing all the cases that I could, and reading everything about the disease that I could find in books and journals, and made a volume of abstracts of all my reading, orderly arranged

It is hard to remember anything of the methods of practice, then generally used, which is still instructive, for observations on the effects of treatment were vaguely made, not exactly recorded, not tabulated, and the principles were deemed sure, whatever consequences might ensue from observance of them

I entered at St Bartholomew's Hospital on the 3rd or 4th of October, 1834 There was very little, or no, personal guidance, the demonstrators had some private pupils, who they "ground" for the College examinations, but these were only a small portion of the school, the surgeons had apprentices, to whom they seldom taught more than to other students, for the most part, the students guided themselves or one another to evil or to good, to various degrees of work or of idleness No one was, in any sense, responsible for them I am not sure that, being well disposed for work, I was the worse for this

The helps to learning were, as one would now think, very defective, though, so far as I know, as good as in any other Hospital There was a small library stowed away in a room next the operating theatre (which was then

on the second floor of the Eastern wing of the Hospital, where Darker Ward now is) and which was used, on Saturdays, for surgical consultations, dressing, and hand-washing. Books were given out as from any subscription-library but there was no reading room. In place of this, some self-elect of the pupils, making themselves into a kind of club, had a small room over a baker's shop near the Hospital-gate, where we could sit during intervals of work and read the journals, and where some, in the evening, played cards, but there was nothing to encourage any kind of book-learning, and Lawrence was the only teacher who had any literary reputation.

The dead-house (it was never called by any better name) was a miserable kind of shed, stonefloored, damp, and dirty, where all stood around a table on which the examinations were made. And these were usually made in the roughest and least instructive way, and, unless one of the physicians were present, nothing was carefully looked-at, nothing was taught. Pathology, in any fair sense of the word, was hardly considered.

In 1834 they had adopted at St Bartholomew's the plan of holding examinations of the several classes for such as were disposed to go-in for the prizes given to those who passed best. The plan had answered, and the examinations were held for the second time in 1835. I went-in for Medicine, Surgery, Chemistry, and Botany, and came out first in all four. I am sure that no one was more astonished than myself, it was my first real competitive examination, and nothing had led me to expect such a result. The surprise was the cause of one of the only two sleepless nights which I have ever had, unless in severe illness.

Another event, in this first year's study, which had some influence on my later life, was the discovery of the *Trichina spiralis*. Dr Cobbold has told the story of the several steps leading to the discovery and following it, in his latest work on the Entozoa. My share was the detection of the 'worm' in its capsule, and I may justly ascribe it to the habit of looking-out, and observing, and wishing to find new things, which I had acquired in my previous studies of botany. All the men in the dissecting-rooms, teachers included, 'saw' the little specks in the muscles but I believe that I alone 'looked-at' them and 'observed' them. No one trained in natural history could have failed to do so.

The discovery had a memorable consequence, in procuring me an introduction to Robert Brown. I wanted to examine the entozoon with a microscope, and there was none in the Hospital. I thought I might get help from Mr Children, who was then chief of the Natural History Department of the British Museum, and to whom Mr Dawson Turner had given me a letter of introduction. He, however, had no microscope, but suggested that 'Robert Brown might help me.' So we went at once to the little room in the Museum in which the great botanist was at work, among books and speci-

mens, and I remember Mr Children's first question, 'Brown, do you know anything about parasitic worms?' and the answer, 'No thank God' But he let me look at my specimens with his little single microscope—the same, I think, that he had done his own grand work with, and I made the sketches of them with which to illustrate the paper read at the Abernethian Society. This was, certainly, the first account given of the new entozoon but Owen, to whom specimens were taken when I had seen that there was a 'worm,' read a paper on it at the Zoological Society, and gave it its name. It mattered little the repute of the discovery would have been of no great use to me and I should have gained less happiness by disputing for it and obtaining it than I have enjoyed in the personal friendship with Owen ever since. It was enough for my advantage that the discovery, and the paper at the Abernethian, strengthened my position in the Hospital.

Thus my first year had passed happily and very prosperously, and I had made many life-long friendships.

1822 — 1902

ADOLF KUSSMAUL

Adolf Kussmaul is another of that select group who made significant contributions to medicine while still students. Kussmaul may be credited with two important steps leading to the development of the ophthalmoscope, the instrument invented by Hermann von Helmholtz in 1851, which made it possible to examine the interior of the eye. He was the first to raise and correctly formulate the important question: Why is the pupil of the normal eye black? In the second place, Kussmaul confirmed the observations made by Mery in the eighteenth century that structures within an eye can be seen when it is placed under water, and was the first to attempt a practical application of these observations. From these observations, Kussmaul concluded that the color phenomenon was due to refraction and that the solution was to be sought in the field of dioptrics. This led him to conceive the possibility of constructing an instrument with which the interior of the eye could be visualized. Kussmaul actually constructed an instrument, but it had the fatal defect that it did not work. It was left to Helmholtz to make this outstanding medical contribution.

EVERY year the University of Heidelberg celebrates founder's day on November 22, the birthday of Karl Friedrich, its restorer. Connected with the celebration is the announcement of scientific subjects for prize competitions, set by the various faculties for the students, and the bestowal of gold medals, established by Karl Friedrich, on the fortunate winners of the past academic year. Together with numerous visiting guests, the faculty and the students gather in the auditorium, the Protector gives the address of the day and reviews the history of the university during the past year. The celebration

closes with the public announcement of the names of the prize winners and of the new prize subjects for the current year

This institution is useful for both students, and teachers. It lures the former to look beyond the practical side of their studies to higher goals, and enables the latter to judge the intellectual activity of the student body and their own energy and ability in stimulating the young men to work. Although student life had been very active, the year 1843/44 had been fruitful. Just as there are good and bad wheat or vintage years, so there are also good and poor academic years. The past year was one of the best for the Ruperto-Carola [the latin name of the University of Heidelberg]. All the prize subjects of the faculties had been dealt with satisfactorily, that of the theological faculty had been won by two people.

The medical faculty had chosen its subject from the field of ophthalmology. It was required that "anatomical, physiological and pathological investigations" be made "of the various colorations which appear in the interior of the eye independently of the transparent media."

Chelius had chosen this subject, his son Franz who attended the clinics with me asked me whether I had any desire to undertake this problem, for if I had, his father would place his library at my disposal.

Before the introduction of the ophthalmoscope the diagnosis of eye diseases resembled the recognition of plants by simple inspection, such as I had practised frequently while botanizing in wood and field. During the summer vacation I had studied Chelius' Handbook of Ophthalmology so well, and had remembered so precisely the pictures described in it, that in the clinic I even succeeded more than once in diagnosing ocular defects that had not been observed. As my teacher saw from this that I was particularly attracted to ophthalmology, he invited me through his son to undertake the prize problem. Without considering the matter at any length, I accepted. My father had once said to me that I could not give him any greater joy than by winning the golden Karl-Friedrich medal. Perhaps I would succeed in surprising him with it.

I first inquired more precisely as to the actual object of the prize problem. As I learned from Chelius himself, he wanted chiefly a critical compilation of the numerous existing theories on the nature of glaucoma, the same disease, which, as I have already related, had deprived Rudolf v. Freydrorf of an eye. It obtained its name from the blue-green color, which the pupil assumes, in place of the normal black color, in this condition. In Greek *glaukos* means blue-green. This striking color change was regarded as the essential symptom of the disease, today other symptoms are considered more important and more constant than the greenish color.

Zealously I attacked the literature of my subject. It was large, and I had to collect it from the libraries of the university, and from those of my teachers Chelius and Tiedemann. It was a great pleasure for me to trace the science of the healthy and the sick eye through its extensive sources. While thus en-

gaged, I soon noticed that the question of the abnormal green color of the pupil depends on a preliminary question, Why does the normal pupil appear black? This question amounts to this, Why don't we see the totally opaque vessels of the retina and the point of entry of the optic nerve behind the transparent structures of the eye, behind the cornea, the aqueous humor, the crystalline lens and the vitreous humor? One can render them immediately visible, if, as Mery observed in the previous century, one examines an excised eye, for instance, a calf's eye, under water. This experiment demonstrates that the phenomenon is due to dioptric arrangements. So much became clear to me, but unfortunately no more.

The question Why is the pupil black, appears to be so obvious that one would think it must have forced itself very early into research. To my astonishment I did not find it raised anywhere. The black color of the pupil appeared so self-evident, that even the experiment of Mery, had remained unnoticed. —It was simply a repetition of a common experience. Man tends rather to inquire into the causes of the most distant and ultimate things, than of those that are closest to him. The creation and the end of the world occupied mankind for millennia, and cosmogonies were invented and the judgment day described, before the questions were raised as to why an apple falls to the ground and a pendulum swings.

Not until such apparently simple questions regarding the cause of "obvious" things are raised and seriously examined, does one recognize their difficult and complicated nature. It is necessary to analyze them into their components and to determine how the whole arises from them. In so doing it may happen that all the points are clarified except one, but just this one is the pivotal point. If it remains obscure, all the work that has been expended on the investigation is in vain. —This is what happened to me.

Donders, the famous physiologist in Utrecht, to whom the entire science of the eyes owe so much, instigated his student, van Tricht, to write a history of the ophthalmoscope up to 1854, Dr. Schauenburg translated this work into German (Lahr, 1854). This work acknowledged that I made a double contribution. I was the first, it relates, to raise and to formulate correctly the question as to why the interior of the eye appears dark, and I was likewise the first who endeavored to derive some practical use from Mery's experiments. In fact I made the first attempt to construct an ophthalmoscope. Even today it is one of my greatest joys to remember that as a student I was the first to recognize the importance of a problem which only the genius of a Helmholtz was able to solve. In 1854, before my departure from the university at Easter I published my memoir. It bears the title *Die Farbenerscheinung im Grunde des menschlichen Auges* [The Color Phenomenon in the Interior of the Human Eye], Karl Groos, 1845. In it I described the ophthalmoscope that I had constructed, and predicted the value that it would have, if one succeeded in rendering the eye ground visible.

With my ophthalmoscope I fared like the well-known Spanish nobleman

with his mare. It was the best horse in the empire of Charles V, on which the sun never set. The noble animal had only one defect, one could not ride on it, because it was dead. My ophthalmoscope was the best in the world, for there was only one, mine, but it had the defect that one could not see with it.

The faculty awarded me the prize. According to the custom at that time, the winners were invited to the university banquet and were entertained by the deans of their respective faculties. I sat at Tiedemann's right, he was kind to me, like a father, my own father could hardly have been more tender.

The judgment of the faculty was written in Latin. I too had had to present my memoir in Latin, but I accompanied the Latin translation with the German original in a separate volume. Impertinent curiosity, however, led me to bend down the corners of several pages, each time two pages together. I wanted to see whether the Latin version would be read, as the German undoubtedly would be. When the two books were returned to me, the Latin pages were still bent at the corners, while the German pages had been separated.

The faculty covered my memoir with praise. According to its unanimous opinion I had treated the subject with so much learning, ingenuity and experimentation that almost every point had been dealt with exhaustively. But I knew better than the faculty, it was precisely at the cardinal point that I had failed. The key to the mystery lay in optics, and my knowledge was inadequate. I went to Professor Jolly, the physicist, to see whether he could help me. He asked me whether the matter was so important. It was so important, I replied, that the invention of the instrument with which I was occupied would create a new ophthalmology. I did not know how to make the matter clear to him. He advised me to try polarized light. But how would that help me? I dropped the experiments, as my examination was just around the corner.

I once complained to Helmholtz about my experiences in this matter. He consoled me. Brucke, the famous physiologist, whose fine experiments on the (lighting up) of the eye had brought him so close to the practical significance of this question, had missed it, and the gifted Grafe had occupied himself in vain with the problem of the ophthalmoscope. —One thing I did achieve, however, I procured several happy hours for my father.

1821 — 1910

ELIZABETH BLACKWELL

When Elizabeth Blackwell conceived the idea of becoming a doctor of medicine, there was no means either in America or Great Britain by which a woman could receive a medical education. Single-handedly, however, she undertook to remove this barrier to the advancement of women. The thought of studying medicine first came to her attention through the illness of a friend, but before long the idea took

on in her mind a moral aspect "The idea of winning a doctor's degree," she writes, "gradually assumed the aspect of a great moral struggle, and the moral fight possessed immense attraction for me"

It is this sense of being a standard bearer of a righteous cause, of consecrating oneself to the service of humanity, which characterizes the earlier generations of women doctors Essentially this attitude represented a blending of the religious intensity of the older Puritanism with the liberal humanitarianism of the nineteenth century In the case of Elizabeth Blackwell the sources of this attitude are not far to seek Her father was an active Non-Conformist, strongly opposed to the Anglican Church Furthermore, all of her brothers and sisters were active participants and sympathizers in the movement for improving the education and the political position of women One of her brothers married Lucy Stone, a pioneer in the American Women's Suffrage movement. The entire family was also opposed to slavery

Elizabeth Blackwell was born at Countership, Bristol, England, in 1821 She was the daughter of a sugar refiner who emigrated to New York in 1832 When she was seventeen years old, in 1838, the family moved from New York to Cincinnati, but soon thereafter Mr Blackwell died, leaving a widow and nine children entirely unprovided for. The three elder sisters, among them Elizabeth, set up a school and managed to support the family In 1842 the school was given up and Elizabeth Blackwell occupied herself with private pupils

It was in 1845 that Elizabeth Blackwell decided to study medicine After being rebuffed in Philadelphia and New York, she finally gained admission to Geneva Medical College, from which she received her medical degree in 1849 Graduation was followed by a period of study in Europe

When she returned to New York, Dr Blackwell entered practice, and in 1853 started a small dispensary for women and children, which later became the New York Infirmary for Women and Children During the Civil War Dr Blackwell was active in securing proper nursing care for soldiers

In 1869 she returned to England and settled in London, where she was active in various reform movements, including women's suffrage Dr Blackwell died in 1910, after a long and useful life Her autobiography, *Pioneer Work in Opening the Medical Profession to Women—Autobiographical Sketches* (1895), is an outstanding human document, and tells a story of courageous and successful pioneering

IT WAS at this time that the suggestion of studying medicine was first presented to me by a lady friend This friend finally died of a painful disease, the delicate nature of which made the methods of treatment a constant suffering to her She once said to me "You are fond of study, have health and leisure, why not study medicine? If I could have been treated by a lady doctor, my worst sufferings would have been spared me" But I at once repudiated the suggestion as an impossible one, saying that I hated everything connected with the body, and could not bear the sight of a medical book

This was true, that I had been always foolishly ashamed of any form of illness When attacked many years before by intermittent fever, I desperately tried to walk off the deadly chill, and when unable to do so shut myself up

alone in a dark room till the stage of fever was over, with a feeling that such subjection to disease was contemptible. As a schoolgirl I had tried to harden the body by sleeping on the floor at night, and even passing a couple of days without food, with the foolish notion of thus subduing one's physical nature. I had been horrified also during my schooldays by seeing a bullock's eye resting on its cushion of rather bloody fat, by means of which one of the professors wished to interest his class in the wonderful structure of the eye. Physiology thus taught, became extremely distasteful to me. My favorite studies were history and metaphysics, and the very thought of dwelling on the physical structure of the body and its various ailments filled me with disgust.

So I resolutely tried for weeks to put the idea suggested by my friend away, but it constantly recurred to me.

Other circumstances forced upon me the necessity of devoting myself to some absorbing occupation. I became impatient of the disturbing influence exercised by the other sex. I had always been extremely susceptible to this influence. I never remember the time from my first adoration, at seven years old, of a little boy with rosy cheeks and flaxen curls when I had not suffered more or less from the common malady—falling in love. But whenever I became sufficiently intimate with any individual to be able to realise what a life association might mean, I shrank from the prospect, disappointed or repelled.

I find in my journal of that time the following sentence, written during an acute attack —

I felt more determined than ever to become a physician, and thus place a strong barrier between me and all ordinary marriage. I must have something to engross my thoughts, some object in life which will fill this vacuum and prevent this sad wearing away of the heart.

But the struggle with natural repugnance to the medical line of life was so strong that I hesitated to pass the Rubicon, and fought many a severe battle with myself on the subject.

At this time I had not the slightest idea of how to become a physician, or of the course of study necessary for this purpose. As the idea seemed to gain force, however, I wrote to and consulted with several physicians, known to my family, in various parts of the country, as to the possibility of a lady becoming a doctor.

The answers I received were curiously unanimous. They all replied to the effect that the idea was a good one, but that it was impossible to accomplish it, that there was no way of obtaining such an education for a woman, that the education required was long and expensive, that there were innumerable obstacles in the way of such a course, and that, in short, the idea, though a valuable one, was impossible of execution.

This verdict, however, no matter from how great an authority, was rather

an encouragement than otherwise to a young and active person who needed an absorbing occupation —

If an idea, I reasoned, were really a valuable one, there must be some way of realising it. The idea of winning a doctor's degree gradually assumed the aspect of a great moral struggle, and the moral fight possessed immense attraction for me.

Extracts from the Journal of 1847

May 27 Called on Dr Jackson (one of the oldest professors in Philadelphia), a small, bright-faced, grey-haired man, who looked up from his newspaper and saluted me with, "Well, what is it? What do you want?" I told him I wanted to study medicine. He began to laugh, and asked me why. Then I detailed my plans. He became interested, said he would not give me an answer then, that there were great difficulties, but he did not know that they were insurmountable, he would let me know on Monday. I came home with a lighter heart, though I can hardly say I hope. On Monday Dr Jackson said he had done his best for me, but the professors were all opposed to my entrance. Dr Horner advised me to try the Filbert Street and Franklin Schools. A professor of Jefferson College thought it would be impossible to study there, and advised the New England schools.

June 2 Felt gloomy as thunder, trudging round to Dr Darrach. He is the most non-committal man I ever saw. I harangued him, and he sat full five minutes without a word. I asked at last if he could give me any encouragement. "The subject is a novel one, madam, I have nothing to say either for or against it, you have awakened trains of thought upon which my mind is taking action, but I cannot express my opinion to you either one way or another." "Your opinion, I fear, is unfavourable." "I did not say so. I beg you, madam, distinctly to understand that I express no opinion one way or another, the way in which my mind acts in this matter I do not feel at liberty to unfold." "Shall I call on the other professors of your college?" "I cannot take the responsibility of advising you to pursue such a course." "Can you not grant me admittance to your lectures, as you do not feel unfavourable to my scheme?" "I have said no such thing, whether favourable or unfavourable, I have not expressed any opinion, and I beg leave to state clearly that the operation of my mind in regard to this matter I do not feel at liberty to unfold." I got up in despair, leaving his mind to take action on the subject at his leisure.

Dr Warrington told me that he had seen his friend Dr Ashmead, who had told him that Paris was such a horrible place that I must give up my wish for a medical education—indeed, his communication would be so unfavourable that he would rather not meet me in person. I told the Doctor that if the path of duty led me to hell I would go there and I did not think that by being with devils I should become a devil myself—at which the good Doctor stared.

Nevertheless, I shrink extremely from the idea of giving up the attempt in America and going to France, although the suggestion is often urged on me

Applications made for admission to the medical schools both of Philadelphia and of New York were met with similarly unsuccessful results

I therefore obtained a complete list of all the smaller schools of the Northern States, "country schools," as they were called I examined their prospectuses, and quite at a venture sent in applications for admission to twelve of the most promising institutions, where full courses of instruction were given under able professors The result was awaited with much anxiety, as the time for the commencement of the winter sessions was rapidly approaching No answer came for some time At last, to my immense belief (though not surprise, for failure never seemed possible), I received the following letter from the medical department of a small university town in the western part of the State of New York —

Geneva October 20, 1847

To Elizabeth Blackwell, Philadelphia

I am instructed by the faculty of the medical department of Geneva University to acknowledge receipt of yours of 3rd inst A quorum of the faculty assembled last evening for the first time during the session, and it was thought important to submit your proposal to the class (of students), who have had a meeting this day, and acted entirely on their own behalf, without any interference on the part of the faculty I send you the result of their deliberations, and need only add that there are no fears but that you can, by judicious management, not only "disarm criticism," but elevate yourself without detracting in the least from the dignity of the profession

Wishing you success in your undertaking, which some may deem bold in the present state of society, I subscribe myself,

Yours respectfully,

Charles A Lee,

Dean of the Faculty

15 Geneva Hotel

This letter enclosed the following unique and manly letter, which I had afterwards copied on parchment, and esteem one of my most valued possessions —

At a meeting of the entire medical class of Geneva Medical College, held this day, October 20, 1847, the following resolutions were unanimously adopted —

1 *Resolved*—That one of the radical principles of a Republican Government is the universal education of both sexes, that to every branch of scientific education the door should be open equally to all, that the application of Elizabeth Blackwell to become a member of our class meets our entire approbation, and in extending our unanimous invitation we pledge ourselves that no conduct of ours shall cause her to regret her attendance at this institution

2 *Resolved*—That a copy of these proceedings be signed by the chairman and transmitted to Elizabeth Blackwell

T J Stratton, Chairman

With an immense sigh of relief and aspiration of profound gratitude to Providence, I instantly accepted the invitation, and prepared for the journey to Western New York State

I had not the slightest idea of the commotion created by my appearance as a medical student in the little town. Very slowly I perceived that a doctor's wife at the table avoided any communication with me, and that as I walked backwards and forwards to college the ladies stopped to stare at me, as at a curious animal. I afterwards found that I had so shocked Geneva propriety that the theory was fully established either that I was a bad woman, whose designs would gradually become evident, or that, being insane, an outbreak of insanity would soon be apparent. Feeling the unfriendliness of the people, though quite unaware of all this gossip, I never walked abroad, but hastening daily to my college as to a sure refuge, I knew when I shut the great doors behind me that I shut out all unkindly criticism, and I soon felt perfectly at home amongst fellow-students.

The behaviour of the medical class during the two years that I was with them was admirable. It was that of true Christian gentlemen. I learned later that some of them had been inclined to think my application for admission a hoax, perpetrated at their expense by a rival college. But when the *bona-fide* student actually appeared they gave her a manly welcome, and fulfilled to the letter the promise contained in their invitation.

My place in the various lecture-rooms was always kept for me, and I was never in any way molested. Walking down the crowded amphitheatre after the class was seated, no notice was taken of me.

1845 — 1933

RICHARD DEWEY

The comments of Richard Dewey on his medical-student days present an accurate picture of medical education in the United States around the middle of the nineteenth century. The newer medicine was in the process of being born, and its impact on medical education, which was ultimately to eventuate in a thoroughgoing reform, was still in the future.

Particularly noteworthy are Dewey's views on women in medicine. His is a progressive stand, and is consonant with his advanced views in the field of medicine, especially in the care of the mentally ill.

I HAVE mentioned the change in the direction of my studies which I made at the end of my second year. The means at my command—rather, the lack of means—made early preparation for active life advisable. After long meditation I had chosen medicine as the profession most consonant with my aptitudes, and in the autumn of 1866 transferred to the Medical College of the

University of Michigan At this time I wrote a playlet, entitled "Mary, the Male-clad Medical Student" It was prompted by the discussion, frequent then, as to the fitness of women for the study and practice of medicine In that dark day, admission of women to this profession was practically unheard of The prologue of my playlet began with these lines

How long must injured woman wait
In sackcloth before Science's gate?

As a student I had taken part in the discussion of the subject by sending to the New York *Nation* an article in which I advocated certain specialties as especially appropriate for women physicians (internal medicine, obstetrics, gynecology), asserting that woman's competence in these would be equal to that of men, and stating my belief that in major surgery she would be at a disadvantage As the matter stood at that time, this was the advanced position The courses in the University of Michigan Medical School consisted chiefly of theoretical instruction, this was true of other schools of medicine in that day In the chemical laboratory and the dissecting room it is true, theory was put into practice, but books and lectures absorbed most of the student's attention Each student was expected to have a preceptor, a practitioner, with whom the time intervening between courses was spent in gaining knowledge of the practical side of the profession Ann Arbor, then a town of a few thousand inhabitants, did not possess hospitals and clinical facilities equal to those of the larger cities Our school, however, gave opportunities which in that day were unsurpassed anywhere in the country for what are now called the premedical branches of study

The foundation stones of medicine, anatomy, and physiology were for me well laid and thoroughly established by a teacher who could with difficulty be equaled in his time or in any time, Corydon L. Ford, supreme master of his subject, who possessed a genius for clear demonstration and for enlisting and holding the interest of his hearers For forty years his teaching on the intricate functions of the organs of the human body threw clear light upon the path of the students before him, in their preparation for entering the field of medicine The beginner has always had a tremendous task in memorizing Gray's *Anatomy of the Human Body*, in learning the names of thousands of bones, muscles, nerves, lymphatics, of organs, glands, secretions I questioned whether Gray possessed a single sympathetic nerve, and addressed an ode to Henry Gray, F. R. S., author of "Gray's Anatomy, an Ode," in which I pronounced maledictions upon him for the torture to which, through him, untold generations of hapless medicos were doomed

There were other inspiring teachers Professor Moses Gunn held the chair of surgery, aside from his brilliant attainments as a surgeon and lecturer, his animation and humor often enlivened his lectures, he invited questions and often answered with interjections of spicy comment He was later called to the chair of surgery in Rush Medical College, now School of Medicine of

the University of Chicago Professor Alonzo Palmer discoursed ably on internal medicine Dr Abram Sager, professor of gynecology, had rare ability in clear demonstration The course in chemistry, organic and inorganic, given under Professor Albert Prescott was advanced for the time Bacteriology and antiseptics had not then been born, microscopy was in its infancy, Virchow's cellular pathology was beginning to work as a leaven, but twenty years were to pass before the hygienic laboratory was established under Victor Vaughn

1839 — 1925

BERNHARD NAUNYN

One of the most prominent of modern German clinicians was Bernhard Naunyn Born in Berlin in 1839 as the son of a Prussian official, Naunyn received the education and training of a member of the middle class in nineteenth century Germany In 1858 he completed his studies at the gymnasium, and entered the University of Bonn to study medicine Naunyn tells us that he had long since decided to become a doctor, but is unable to relate this decision to any specific cause Later, he transferred to Berlin where he graduated in 1863, with a dissertation on the development of the *Echinococcus*, a parasitic worm

In 1869, Naunyn received an appointment as professor of internal medicine at Dorpat Here he taught until 1871, when he received a call to Bern, where he likewise remained only a short while In 1872 Naunyn became professor at Königsberg, and in 1888 he succeeded Kussmaul at Strassburg He retired as professor emeritus in 1904

Naunyn was a student of the great German clinician F T von Frerichs (1819-1885), and was interested chiefly in diseases of metabolism Widely known are his studies on diseases of the liver and the pancreas, gall-stones, and diabetes It was in connection with his studies of diabetes that Naunyn in 1906 coined the term *acidosis* to characterize the condition underlying diabetic coma—a term which has since come to have a much wider application and use in human biology than Naunyn could foresee

His *Erinnerungen, Gedanken und Meinungen* (Reminiscences, Thoughts and Opinions) (1925), from which the following selection is taken, gives an interesting picture of the man and his time Naunyn's account of his final examination throws into the sharpest possible contrast the transitional character, the conflict between the ancients and the moderns, of German medicine about the middle of the nineteenth century But even the most exact and objective of investigators can go astray, as Naunyn relates so amusingly in his description of how he mistook his own heartbeat for that of a dead man

THE medical clinic and the echinococcus occupied me completely and took all my time After one year's work I was able to write my doctoral dissertation, "De Echinococci evolutione" Even today I am proud of it, not only because it is a small but sound study, which still retains its value, but because

of two achievements connected with it, first, that I translated it into Latin myself, and second, that I prepared the illustrations (for the German version in the Reichert-Dubois Archiv) Wagener, who was a great artist with an India-ink brush made the first one for me, then he said to me "Now, do it yourself, you will be able to do it" And so he gave me the fine brush and the ink, and with the aid of the drawing prism which he also presented to me, I produced the possible illustrations that are to be found in the particular volume of Reichert and Dubois' Archiv In any case, it is something of an accomplishment for a person who had never drawn and who lacked any talent for drawing Wagener looked quite pleased and said "Now, do you see!" and under the illustration he wrote "*Fortes fortuna adjuvat!*"

On May 22, 1862, I received the degree of doctor Reichert, who was dean then, devoted some remarks to me which sounded very nice and made me feel very proud I was not yet accustomed to academic hyperbolas, and to their grandiloquent sound when spoken in Latin

I utilized the ninth semester (summer 1862) to take the various compulsory courses that I still needed, and to prepare myself for the state examination, which I passed in the winter of 1862-63 Instead of passed, I would like to say endured, for the medical state examination is a prolonged torment For three whole months one is harassed from one subject to another, always on the go without an end in sight On top of this, in Berlin there were the peculiarities of the examiners Several rather superannuated gentlemen, such as Jungken and Nagel, demanded categorically to be regaled with their own nonsense This went so far that in certain quiz courses that prepared students for the examination, for instance, in Ravoth's surgical course, the students were told "You will answer Jungken in this way, but on no account whatever will you tell this to Langenbeck or Wilms!" And sometimes it was absolutely unpardonable stuff that was demanded on these occasions I will relate what I personally experienced during the examination Jungken actually brought up again the famous question "What is gypsum?" "Calcium sulphate" was the answer, although we knew that the old gentleman wanted to hear "calcium carbonate" "No, not on your life" was the reply, and again the question went down the line until one of the candidates divested himself sufficiently of shame to utter the desired "calcium carbonate"—A foul-smelling bone fistula was probed with a silver probe, which was black when pulled out "What is the substance in pus which turns the silver black?" "It might possibly be hydrogen sulfide," was the reply which was quite correctly expressed in a cautious manner "The deuce you say," replied Jungken angrily, "might be, might be! You must know some chemistry! That is acetic acid, by which one recognizes suppuration of bone, and which dissolves the osseous substance" At the final examination Nagel questioned me on changes in the skin of pregnant women Among other things I mentioned the "deposition of pigment" "Good, what kind of a pigment is it?" "As far as I know there are no investigations on this matter" "My God, there is that modern precision again!

Well, exact investigations may be lacking, but there are still observations at the bedside that can guide us " I remained silent and a malicious look probably appeared on my face, because he went on to say "Yes, yes, you are much too clever for such simple observation of patients, but haven't you ever seen, or at least heard, that carbon is deposited on the skin of pregnant women?" My face must have taken on an increasingly stupid expression, for Geheimrat Nagel continued with greater vigor than before "Yes, carbon! it can be wiped off with the hand (*sic!*) Thus the pigments are carbon, at least it is probable " (All this is related word for word) The old gentleman broke off the conversation and left me sitting in a state of astonishment, which changed into a feeling of anger that could no longer be suppressed when the following examiner for general scientific education took up the subject of my doctoral dissertation and began to examine me concerning my echinococcus Thereupon there occurred a very unpleasant scene, for I insisted steadfastly on my painfully acquired knowledge, and the examining board soon saw that I knew a great deal about the aforementioned echinococcus, while Karsten (a botanist) knew very little about it As my friend Lieberkuhn was among the examiners, and the chairman of the commission Geheimer Oberregierungs-und Medizinalrat Housselle knew me as a promising young man, the result was that I passed the examination while Karsten did not examine again It was good that the matter ended thus .

One wintry Sunday morning a man who had been frozen to death was brought in He had been found on Tempelhof field, as stiff as a board There were no heart sounds to be heard, he was dead Nevertheless, creatures that have been frozen can come to life again I myself had often observed it in lower animals, indeed, I was particularly well acquainted with this phenomenon in crayfish, with which I just happened to be working To be sure, man is not a crayfish, and despite Edmond About I do not believe to this day that a man who has been frozen stiff can come to life again When the cadaver had thawed out, it appeared as fresh as a person in the pink of health Even though there were no heart sounds to be heard, I performed the prescribed attempts at resuscitation But when even the strongest electrical stimuli failed to elicit any muscular contractions, I waited a half hour longer and then had the corpse taken to the morgue Nevertheless, I could not forget the remarkable appearance of the corpse which seemed so alive, and began to read about freezing to death Everywhere I found the statement that persons frozen to death "who no longer show any signs of life" can come to life again, even after some time has elapsed My imagination became excited and finally drove me to the morgue It was Sunday noon The entire Charité was bathed in the brightest winter sunshine Stairs and courts were devoid of any human being, all was quiet, deserted, bare, a rather ghostly atmosphere overlay everything In this mood I arrived at the morgue There was my man, as fresh and rosy as before, very different from the comrades alongside of him

I began to auscultate him once again, but now I hear clearly *dup, dupp-dup, dupp*—heart sounds! Fischer, the chief attendant of the morgue (and of the Pathological Institute), comes in "But, Doctor, what are you doing here on such a beautiful Sunday afternoon?" "Well, Fischer, I am observing something on this cadaver." "Oh, yes, that's the fellow who froze to death and was just brought in, well, so long"—There I am again listening, and again I hear "*dup, dupp-dup, dupp*" My hackles begin to rise, what should I do now? This man must be removed from the morgue. Just at this moment Fischer returns "Still here, Doctor, do you want to spend the entire beautiful day here?" "Fischer, I believe he's alive!" "Now Doctor, you know that doesn't happen. I've been here thirty years and not a one has ever left this place alive." "But, Fischer, he has heart sounds!" "Heart sounds, my eye! he has large cadaver spots, look at them!" And he lifts up the cadaver so that the back can be seen. "Take a good look, Doctor, you can go and eat your dinner in peace, this fellow is dead!" Out he went and right he was, for now I realized I was hearing my own pulse which was beating strongly as a result of my excitement. With this cleared up I withdrew, full of gratitude to my friend Fischer.

1844—1924

FRIEDRICH TRENDELENBURG

The experiences of Friedrich Trendelenburg as a medical student at the University of Berlin offer an interesting counterpart to those of Bernhard Naunyn. Trendelenburg's description of his graduation, during which the student had to defend a set of Latin theses, shows the long arm of medieval tradition extending into relatively recent times, and emphasizes strikingly how very young is modern medical education. Of equal interest are Trendelenburg's remarks on medical history. It was during this period that medical history was becoming an independent discipline, and this situation is reflected in his comments.

DURING my first semester at Berlin, apart from a lecture course given by my father from which, unfortunately, I did not profit as much as the son of a philosopher should have, I took anatomy and exercises in dissection with Reichert, anatomy of the sense organs with Lieberkuhn, experimental (inorganic) chemistry with Heinrich Rose, history of medicine with Hirsch, as well as a public lecture course on meteorology given by Dove.

Of these men, Heinrich Rose was held by us in particular esteem as a person. He was a simple man, high-minded and independent in his opinions, whose entire life was devoted to his science and the profession of teaching. He lived in the Cantianstrasse, approximately where the National Gallery is now situated. The auditorium was located in the same house and the lecture took place early in the morning. The professor appeared in an old dressing

gown after having shaved hurriedly whereby he not infrequently cut himself. His toilet was then completed by a handkerchief tied around his neck as a protection against any drops of blood that might drip down. The lecture was likewise rather informal and somewhat too hastily presented. This was also true of the experiments, so that he was likely to speak about a beautiful red precipitate, while the elevated, vigorously shaken test-tube showed a grass green color. Great merriment was evoked when he pointed to his nose and praised it as the chemist's finest reagent. The story was told that Rose had once appeared at court without his orders, and when he was asked why he had omitted to put on his decorations, he replied "Because that is the only way in which I can distinguish myself here." To our sorrow we had to escort this revered teacher to his final resting-place during the winter semester. He died of pneumonia at the age of 69. Before his death he had determined that his students were to be given back the fees paid for his course, even though the semester was in large part already past.

Reichert, the anatomist who had done such meritorious work in embryology, especially on the brain, had the rather unprepossessing habit of introducing into his lectures his personal scientific feuds with his colleagues. Max Schultze in Bonn usually got the worst of it, and occasionally he called Virchow a muddle-head. With his students Reichert cultivated a patriarchal, jovial friendship, the winter dance parties at his house with his 'pretty daughters were very popular. For our part we celebrated his birthday with a convivial gathering of medical students, where those who were candidates for the impending examinations did not fail to make speeches in which they flattered him.

Very different was Lieberkuhn, a descendant of the 18th century Berlin anatomist and physician, whose name is perpetuated in Lieberkuhn's glands in the intestine, he was an old bachelor, and a typical German scientist of the old school, sober, dispassionate, reliable, taciturn, interested only in established facts.

For a short time I worked in the anatomical laboratory in the University. I gave it up, however, when I realized that the problem which Reichert had given me, and which he wanted to see solved in favor of his preconceived opinion, would have involved me in a polemic with Max Schultze over the so-called prickly cells and ridge cells, and when I saw that my teacher's view was not confirmed by my microscopic observations. In the end the view of Max Schultze was found to be correct.

I should naturally have left the history of medicine for later semesters, since one can understand the history of a science only when one is familiar with the science itself. August Hirsch, the excellent scholar who only recently had been called to Berlin from Elbing, where he had been a practicing physician, lectured to very few auditors. Most doctors lack completely any historical interest, not only while in medical school, but later also. To be sure,

the gap between present and past is greater in medicine than in the so-called humanities [*Geisteswissenschaften*], and widens with every new research method. Intrinsically, the past in medicine no longer has the same permanent value as does, for instance, the philosophy of the Greeks, but in medicine too. Today always rests on the foundation of Yesterday, and it is a matter of the highest interest to trace the gradual development. Likewise, in medical practice, especially in surgery and obstetrics, many things are much older than the ignorant dream. Could we but visit the polyclinic of a temple of Asclepius for a few days, we would be astonished at the similarity of the organization to that of our hospitals, especially as they were before the introduction of anesthesia and antisepsis. Were a woman to come out of the temple, bearing on her arm a crying child, whose clubfoot had just been manipulated by a priest-physician, working like a maker of waxen images [*Wachsbildner*] and fixed in the correct position with strips of sticking-plaster, flannel bandages, a stiff leather sole and adjustable straps on the lateral side of the foot, we would hardly be able to tell from the bandage that it had not been applied by one of our contemporary surgeons or orthopedists, who perhaps regard themselves as the inventors of the method. Or were we to enter a Roman valetudinarium, where a student of Aulus Cornelius Celsus was just about to relieve a patient of the sebaceous cysts on his head, we would see that this minor operation was already performed by the Romans in exactly the same way that we learned to do it, and that we taught to our students. For me Hippocrates and Celsus, Ambroise Paré, Felix Wurtz, John Hunter, Richter of Göttingen, Dieffenbach and all the other old masters of surgery were always esteemed friends.

In the next two semesters I became especially interested in physiology as presented by Du Bois-Reymond. Corresponding to his Latin origin (his family came from the French section of Switzerland), Du Bois' lectures were somewhat theatrical, and not entirely without thought for oratorical effect, especially in the very well attended and much discussed public lectures on general scientific problems, but they were irreproachable in their clarity and perfect in form. His slogan *Ignoramus ignorabimus*, which reassured the theologians, is notorious. In 1870, on the day after the French declaration of war, it was said, he began his lecture with the brief statement "Gentlemen, excuse my French name!" Of the striking comparisons, which he used to make physiological processes clearer, I recall how he compared the circulation of the blood and the movement of the individual blood corpuscles from the heart through the aorta and the smaller arteries to the capillaries and then back again through the veins to the heart, with tourists in Switzerland who leave the capital with an express train, then scattering proceed with the slower mail-coach toward the mountains where, after alighting at a station they wander along the narrow paths on foot, and finally return to the capital. In his relations with the students Du Bois' attitude was one of haughty and cool reserve. As my father's son I was several times invited to his hospitable home.

I wanted to participate in the imminent campaign as a military physician, and therefore took advantage of the permission granted to medical students who were in their last semester to take the doctoral examination, which was then still taken before the state licensing examination, before handing in the doctoral dissertation. According to the custom at that time, the *examen rigorosum—lucus a non lucendo*—was held at the home of the dean, von Langenbeck. The written examination was pleasantly interrupted by a good breakfast, the oral part in the afternoon, by cakes and candy. The graduation ceremony was set for June 12, 1866. On this occasion the doctoral candidate had to defend in Latin the thesis that he advanced against his three opponents—in my case my friends Justus Olshausen, Max Lehnert, and a fellow-student named Heller. The theses reflected the contemporary state of science and the opinions of the teachers. When one of the opponents was a non-medical man, a topic was chosen which was also of interest to the other faculty. Thus, for the law student Olshausen, I had advanced the thesis that in obstetrics under certain circumstances one was justified in carrying out the perforation of a living child, the other two theses which insisted on early resection in coxitis, and on the immediate investigation and extraction of missiles on the battlefield, showed the influence of the teaching of Langenbeck and Hueter.

Naturally, the entire affair was a comedy. Everyone had a copy of the dissertation, beautifully bound in red—in this instance only the cover of some former dissertation—and from the slips of paper that were inserted between the covers, we read off the few Latin sentences that made up the scientific tournament. The most important aspect of the entire affair was not to miss the cues. After each of the opponents had declared himself vanquished, and had congratulated the victor (*quae cum ita sint, facere non possum quin me devictum te victorem publice proclamem*, or in some similar form), the candidate asked whether any of those present in the audience wished to oppose his theses. This was an empty formula that had come down from former times, and was generally answered by silence. But, o horror! my father arose in the audience and in a well-worded, fluent Latin speech attacked one of my theses. Amid general merriment, I replied with several mangled Latin sentences, and this silenced even this most dangerous opponent. I then took the doctoral oath, which was similar in its wording to the fine old Hippocratic Oath. The only false note in the proceeding, however, was that the right to practice medicine was not acquired until after one passed the licensing examination later, and the young doctor would have come into conflict with the public prosecutor had he hastened to aid every patient, rich or poor, as the oath required. After taking the oath on the lower platform where I had been standing throughout the ceremony, I was proclaimed Doctor medicinae et chirurgiae by the dean and called to the upper platform reserved for doctors only, where he handed me my diploma. An expression of thanks on my part and a traditional Latin prayer completed the ceremony. In the evening we had a very joyful banquet where everyone talked plainly and as he wished.

1852 — 1934

SANTIAGO RAMÓN Y CAJAL

Attention has already been called to the fact that education need not necessarily take place in the school, and that home and parent may replace both schoolroom and professional teacher (see page 41) This is as true of medical education as of any other kind Cajal's training in anatomy at the hands of his father was undoubtedly an excellent preparation for the future investigator of the structure of the nervous system His experience in robbing a graveyard to obtain the bones necessary for a study of the human frame recall similar exploits by Cajal's anatomical predecessors, Andreas Vesalius (1514-1564) and Felix Platter (1536-1614)

THE summer of 1868 is associated in my memory with my initiation into anatomical studies

I have already mentioned in an earlier chapter that throughout his career my father had been a skilful dissector and an ardent student of human anatomy He used to say that his surgical successes were due more to the examination of bodies than to the reading of books

It is important to recall, for the understanding of what follows, that those days were the golden age of artistic surgery, of precision and manual dexterity The laurels won by Velpeau and Nélaton in France, and by Argumosa and Toca in Spain were still fresh, and young physicians, expert in the subject matter of dissection, left the classrooms resolved to emulate with new operative feats the glory of such great masters And it must be confessed that the undertaking was more difficult then than now Formerly the heroes of the scalpel triumphed only when they had taken the trouble to scrutinize the most remote recesses of the organism

At that time microbiology had not been born Neither Pasteur nor Koch had made known their memorable discoveries, of such great value for the art of surgery The guarantee of success depended then almost entirely upon the neatness and rapidity of the intervention and, especially, on the degree of clearness with which the complicated living mechanism was represented in the mind of the surgeon in the solemn moment of defloration of the virginity of the organs The operator with a good foundation, educated in the amphitheatre, could foresee the course of the scalpel through the labyrinth of muscles, nerves, and blood vessels with the same precision with which the artilleryman foresees the path of a projectile when he works out his equations

After what I have just said the reader will not find it surprising that my father decided to develop in me a taste for anatomy somewhat early Relying, no doubt, upon the common aphorism, "He who strikes twice," he decided to inculcate the fundamental ideas of human osteology into his son immediately and vigorously

"The study of the bones will seem to you dry and burdensome," he told me, "but you will find there, in compensation, an illuminating introduction to the knowledge of medicine. Almost all the commonplace doctors are such as a result of having had an insufficient elementary training. Internal pathology has not a little of the character of a contemplative science, like astronomy, it foresees eclipses, which it cannot avoid, while external pathology, like a science of action and of control, ventures anything, changing and suspending at will the course of the organic processes. I should like to convince you thoroughly that your advantage and comfort depend upon being a surgeon rather than a physician. So far as the rewards are concerned there will always exist between the surgeon and the physician the same relation as between the diplomat and the military leader. He who triumphs by persuasion earns esteem not without envy, while he who triumphs in battle dominates even envy itself. Glory follows the latter quickly, the former may pursue it without ever overtaking it. It is a sad truth that man bows only before crimson glory! A little blood heightens the splendour of the success, stamping it with the hall-mark of popularity."

By these arguments and others, which have escaped my memory, the scientific and social supremacy of surgery over medicine was demonstrated and the determination to initiate my anatomical education as soon as possible was justified. This was to commence with osteology, the basis and foundation of the whole medical edifice. Personally, I am convinced that the future dissector of Zaragoza, the professor of anatomy of Valencia, and the modest, but active and persistent investigator which I became later on were the fruit of these first lessons in osteology expounded in a barn. Perhaps it would interest the reader a little to know how we procured the scientific material for the new course of instruction. At the risk of being tedious, I shall enter into a few of the details.

To study the bones on paper, that is to say theoretically, would have been a didactic crime of which my master was incapable. He knew well enough that nature can be understood only by direct study, and that books are for the most part nothing but catalogues of names and classifications of facts.

But how to acquire the precious anatomical material? One moonlight night, master and pupil silently left the house and climbed the walls of the deserted cemetery. In a hollow in the plot of ground, we saw, tumbled in confusion and half buried in the grass, various skeletal remains derived, no doubt, from those wholesale exhumations or disposessions which the living impose upon the dead from time to time under pretext of scarcity of space.

Deeply was I impressed by the finding and examination of these human relics! In the pallid gleam of the luminary of the night, those skulls half covered with fine gravel, and with irreverent thistles and nettles clambering over them seemed to me something like the hulk of a ship cast up on the shore. Restraining our emotions, and fearful of being surprised in our funereal task,

we began the collection, picking out from that shoal of human shells the most complete and perfect and least weathered crania, ribs, pelves, and femurs

As we climbed the wall of the cemetery, in leaving it, with our gruesome burden on our shoulders, fear made me hasten my steps I seemed to hear in the rattling of the bones protests and imprecations from the defunct, each moment I feared that some ghost or sprite in suffering might intercept our steps and castigate the daring profaners of the dead

Nothing happened, however The shock of the supernatural, so appealing to and yet so feared by my morbid sensibilities, was entirely absent from the macabre episode, during which, to complete the commonplaceness of everything, there did not appear even the livid gleam of the will-o-the-whisp

The checking-over and study of our gruesome spoils began at once In this exodus across the stony human desert, our Moses was the monumental book of Lacaba, to which Cruveilhier was added later on, but it was really my father who led me to the promised land Swept away by his irrepressible ardour in teaching, he devoted all his leisure hours to making me observe the most insignificant details in the conformation of the bones, developing in me, in the process, a quality little cultivated by the schoolmaster, namely the analytical sense, or rather the aptitude for noticing accidental differences and details in what is apparently ordinary and uniform Nothing important remained unobserved in the internal or external morphology of each piece of the skeleton

If things are looked at in their true light, my enthusiasm for anatomy formed one of the many evidences of my tendencies, for my artistic idiosyncrasy, osteology constituted one more subject for pictures Thirsting for the objective and the concrete, I seized eagerly the fragment of solid reality which it presented to me Dry as they were, these facts were for me something more clear and definite than the dialectic of Don Ventura and the lucubrations of metaphysics I felt a special delight, moreover, in taking apart and putting together again, piece by piece, the organic clock, and hoped some day to understand something of its intricate mechanism

My father was greatly pleased as he observed my application He saw at last that his son, although so much discredited by his mischievous escapades at the Institute of Huesca, was less idle and frivolous than he had believed, and in the optimistic forecast which every father likes to make of the future of his children, he thought that his offspring would not be reduced to vegetating sadly in a village Why should he not eventually have to wear the honourable toga of the teacher?

I remember still how great were his pride and pleasure—rather excusable in consideration of his double rôle of father and teacher—when he asked me to air my osteological knowledge before some professional friend, propounding such questions as “What organs pass thorough the *sphenoidal foramen* and the *posterior foramen lacerum*? With what bones does the *orbital process* of the palatine articulate? At what point in the face is it possible to touch five bones with the point of a pin? How many muscles are inserted on the iliac crest

and on the *linea aspera* of the femur?" These and a thousand other such questions I answered without hesitation, to the amusement of those present

My father wondered, no doubt, that a boy who was considered—and such was the truth—to have a poor memory should have succeeded in retaining, after only two months of work, so many hundreds of difficult names and very many descriptive details regarding the connections of arteries, muscles, and nerves "Bah!" he used to exclaim in a tone between severity and endearment, "your weakness of memory is the excuse with which you try to cover up your idleness" And in truth we were both in the right As I have pointed out before, my memory was poor for miscellaneous words, for the dust of isolated concepts, but such mnemonic weakness was much diminished when the word and the idea were associated with some clear and vigorous visual perception Besides, it is common knowledge, and is a fact well studied by the psychologists and educationists, that there is a tenacious association of verbal symbols and scientific concepts with the recollection of an object observed repeatedly and attentively The existence of exceptions seems doubtful, and I think that those who complain of an untrustworthy memory are mistaken in their method of learning They read in books instead of reading in the objects themselves, they try to remember without taking the trouble to assimilate and reflect

1848 — 1915

EDWARD L TRUDEAU

Edward Livingston Trudeau, pioneer in the climatic treatment of tuberculosis in the United States, was born in New York City in 1848 After spending most of his youth in Paris with his family, he returned to New York in 1865 Here he began the study of medicine, receiving his medical degree from the College of Physicians and Surgeons of New York in 1871 Later that year, in June, he married Lottie Beare, who was to prove herself a pillar of strength to her husband during his illness and his subsequent work in tuberculosis In 1873 Trudeau fell ill, and a diagnosis of pulmonary tuberculosis was made by Dr Edward G Janeway, the eminent New York consultant Advised to seek a mountain climate, he went to the Adirondacks where he determined to live henceforth In 1876 Trudeau settled at Saranac Lake, where in 1884 he opened a sanatorium for the treatment of pulmonary tuberculosis in patients of moderate means Thenceforth, until his death in 1915, Trudeau was deeply interested in the early diagnosis of pulmonary tuberculosis, and made many important contributions to the knowledge of this subject

By the establishment of the Adirondack Cottage Sanatorium, Trudeau gave great momentum to the tuberculosis sanatorium movement in the United States The story of his life and accomplishments is truly remarkable, it is modestly presented in his *An autobiography* (1916)

Medical education in mid-nineteenth century America was in a parlous state Most of the medical schools had no connection with a university, nor were they connected with hospitals As a result the instruction was limited to theory The

preceptorial system, which had previously insured for the fledgling physician at least a minimum of practical training, had become nominal. All the training that a young doctor had previously received now had to be obtained within the medical school, which was unable to provide it. Instruction consisted almost wholly of didactic lectures. For the most part, personal contact between teacher and student, and between student and patient, was lost. A small group went abroad, but only very few could afford to do so.

Yet, in a minority of instances the results far exceeded what might have been expected of such a system. One such student was Edward L. Trudeau. Certainly the medical education which he received did little to prepare him for his later career as a specialist in the diagnosis and treatment of tuberculosis.

THE requirements for a medical student in those days were of the simplest. There was no entrance examination. All the students had to do was to matriculate at the college and pay a fee of five dollars, attend two or more courses of lectures at the college, and pass the very brief oral examinations which each professor gave the members of the graduating class on his own subject. In addition, the law required that every student enter his name with some reputable practising physician for three years as a student in his office—a rather hazy and indefinite relation, for which he paid the physician one hundred dollars each year. If these requirements were met the long-hoped-for sheepskin was forthcoming, and the new M.D. was turned loose on the world to meet as best he could the complicated responsibilities of a medical career.

I chose as my preceptor Dr. H. B. Sands, who then lectured at the college of surgery, and that gave me the great privilege of being a member of the Professor's Quiz, which was composed of all the Professor's own students, and they were examined once each week by every professor on his own subject.

When I returned from my first visit to Dr. Sands, after entering my name in his office as one of his students, I carried under my arm a new Gray's *Anatomy* and, wrapped up in a piece of brown paper, two venerable human bones Dr. Sands had given me to study. By their dark appearance and high polish they had evidently been already used by generations of medical students, but I felt quite proud of them nevertheless. In after years I often brought much more unsavory and objectionable anatomical curiosities home for study, until finally my landlady objected. One of these dark yellow bones I decided was an arm bone, but the other, which looked like the flange of a propeller, I was utterly at a loss to place anywhere in the human body at first. Finally, with the aid of my Gray's *Anatomy* I concluded it must be a shoulder blade, and began to try to memorize the extraordinary names of its parts and processes and of its muscular attachments, until they finally overcame me and I went to bed. This was the first step in my medical career, and the turning point between an easy life of pleasure to one of work and responsibility. After this my evenings were generally spent in the little hall bedroom with my anatomy instead of at the Club with my boon companions.

The College of Physicians and Surgeons was then a not very imposing institution on the corner of Twenty-third Street and Fourth Avenue, and very appropriately had a drug-store and an icecream saloon occupying the basement of the high-stooped three-story brick building which was devoted to the uses of the College. The dissecting room was on the top floor.

There was very little clinical or bedside teaching in those days, although the professors of medicine held public clinics occasionally at Bellevue and the New York Hospitals, and all the students were notified of the daily operations by a notice on the bulletin-board of the College. The teaching was all done by lectures and charts on the wall. The charts, which hung up just before the lecture by the professor's pet student—often under a pitiless fusilade of missiles—were generally of a gigantic size and strikingly and vividly drawn and colored. I can see some of them distinctly now, so strong an impression did their exaggerated characteristics make on my receptive mind.

The lectures on Practice of Medicine and Surgery were didactic and descriptive. What the professors taught was well taught, especially the clinical side, and was up to the knowledge of the day, but there was much less to teach them than now, and theories were accepted and taught without proof when definite knowledge was lacking, as laboratory and animal experimentation were still in their infancy.

Pathology was taught by the Chair of Medicine as a side issue. No laboratory microscopic studies were required of the students. The theories as to the causation of disease were discussed and criticized in the lectures, as well as the classification, which was based entirely on the gross and microscopic pathology, but the exciting causes of these diseases remained necessarily theoretical.

This was true of tuberculosis. Dr. Alonzo Clark taught that it was a non-contagious, generally incurable and inherited disease, due to inherited constitutional peculiarities, perverted humors and various types of inflammation, and dwelt at length on the different pathological characteristics of tubercle, scrofula, caseation, and pulmonary phthisis, and their classification and relation to each other. How absolutely different is our present conception of the disease, owing to the light thrown on its causation by animal experimentation and bacteriology! But bacteriology was an unknown science in those days.

The clinical side of medicine, however, was wonderfully accurate and well presented, and the treatment, based on the lecturer's personal observations, could not be criticised.

While in the College one of the students developed symptoms of tuberculosis of the lungs, and, with my brother's case ever before me, I felt deeply for him and wanted to help him. I decided to brave Dr. Clark in his office and lay my friend's case before him. The interview, like all interviews with Dr. Clark, was a brief one and to the point. He listened to me attentively as I described my friend's case, and then rising from his chair said, "Tell your friend to go to the mountains and become a stage driver for a few years. Good

evening " If Dr Clark's teaching seems obsolete to us now, his treatment certainly was up to date Driving a stage in the mountains means an open-air life, rest, and a good climate, and embodies the main features of our modern treatment of the disease

Dr Alonzo Clark was admired for his learning, though feared by the students on account of his gruff, short manner, and his, at times, pitiless irony The other professors all quizzed their students once a week at their offices, but Dr Clark always held his weekly quiz in the upper lecture-room at the College and invited the entire class to be present We were all in dread of being called up, as our mistakes were commented on sometimes in what seemed to us an unnecessarily severe manner I was fortunately never specially held up to ridicule, but I resented Dr Clark's apparent unfriendliness to the students

I remember on one occasion the laugh of the class was turned on a timid friend of mine, a man by the name of Little, and this aggravated my antagonism to Dr Clark It was a public quiz evening, and as Dr Clark called out Little's name he added, " 'Man wants but Little here below nor wants that Little long', so make your answers as brief as possible, Mr Little " Poor Little was covered with confusion and failed in his answer I remember I nearly got myself into trouble by trying to get even with Dr Clark He was lecturing on dysentery the next day, and in speaking of the treatment inadvertently said that "ice injections into the bowel should be used " Questions were often written out and passed up unsigned to the professors to answer So under cover of my note-book I wrote on a piece of paper, "What kind of a syringe do you advise for injecting ice?" The paper was passed up to the Professor, who put on his glasses, looked at it, tore it up and went on with his lecture I thought, however, he suspected me, for his keen black eyes gave me a sharp look

When I came up for final examination Dr Clark's manner was so severe and his questions so searching that I made up my mind he guessed that I had been the offender on that occasion I was almost in a tremor with fear when I was admitted to his bare and dusty sanctum under the stairs of the college The old gentleman sat with his fur-lined coat on his knees and nodded to me as I entered, then began to look down his list of the student's names In my anxiety to be on pleasant terms with him I volunteered, "My name is Trudeau sir " "I know it," was the only reply, followed by a dreadful pause Then he said, "Mr Trudeau, what is pain a symptom of?" At first I was floored and did not know what to answer then I pulled myself together, and began with the inflammations, neuralgias, etc and mentioned as many as I could Another pause "You have omitted one long pain " "Sciatica," I answered "Well, Mr Trudeau, what is hemorrhage a symptom of?" and then, "Well, Mr Trudeau, what is fever a symptom of?" and so on I was glad to escape when the ordeal was over, but as no other student reported having been

asked such searching questions, I have always felt the old gentleman had been getting even with me for trying to poke fun at him about the ice injections

1854 — 1915

PAUL EHRLICH

Several years ago a motion picture entitled "The Magic Bullet" was presented to the public. The "Magic Bullet" to which the title had reference was Salvarsan, an arsenical compound prepared by Paul Ehrlich, and which he had found to be effective in the treatment of syphilis. This discovery crowned with success a scientific career begun while Ehrlich was still a medical student.

Born in 1854 at Strehlen, a small town near Breslau as the son of well-to-do parents, he grew up in a family where an interest in science was something of a tradition. After completing his secondary studies at the gymnasium in Breslau, Ehrlich matriculated as a medical student at the University of Breslau. He later studied at Strassburg, Freiburg, and Leipzig. The chemistry and structure of living tissues were his particular interests, and while still a student he began to study the functions of living cells by means of dyes. In the course of these investigations, Ehrlich made very important contributions to the knowledge of the blood cells. These studies led him to the theory that within the body chemical substances have specific affinities for certain elements. Consequently, he reasoned, it must be possible to find compounds that can kill bacteria without damaging the body. Ehrlich set out to find a remedy for syphilis and, in 1910, finally succeeded with the production of Salvarsan.

Always a non-conformist, Paul Ehrlich did not have the usual academic career. He was associated with Koch in Berlin when the latter was carrying out his classical work on tuberculosis. In 1896 the value of Ehrlich's work on serum therapy was recognized by the Prussian government, and he was made director of the Royal Prussian Institute for Serum Testing, a modest establishment despite its imposing title. Three years later, the Royal Institute for Experimental Therapy was created at Frankfurt and placed under his direction. In 1908 Ehrlich received a Nobel award for his studies on immunity. He died in 1915 at Homburg v. d. Höhe.

The following sketch shows clearly how the basis for his later researches was laid while he was still a medical student.*

THIRTY-SIX years ago (1872) I began my studies in Breslau. Besides mathematics, to which I was attracted by an unfortunately unrequited love which still exists at present, not a single one of the premedical subjects interested me, so that I soon departed for the recently founded university of Strassburg, which had been in existence only for a few semesters and represented practically the ideal of a rising university city. No tradition had as yet developed. The faculty was the best and the most interesting that one can imagine. Here, under the aegis of the master anatomist, Wilhelm Wal-

* See also page 264 for a description of Ehrlich as a student by Wilhelm Waldeyer, the anatomist.

deyer, as whose particular student I always regard myself, the love for medical science was awakened in me by his powerful inspiration. It was the microscopic course in particular, which he always conducted with infinite affection, that unlocked for me the mysteries of microscopy and interested me in histology. At that time I already became interested in staining, which was only in its beginnings, and thus the germ was planted for my later development. After returning from my vacation I happened upon a paper by Heubel in which he believed to have demonstrated that the mystery of lead poisoning could be investigated by placing the individual organs, liver, heart, kidney, in dilute lead solutions and then determining how much of the metal was absorbed.

The reading of this paper was a revelation and—also a kind of omen for me.

Thus at that time the “binding principle” already appeared to me as the foundation of pharmacology in its clearest form, and I consciously set myself the task of determining the distribution of chemical substances in the organism as the basis of pharmaceutical action. I must admit that this realization did not contribute favorably to my studies, I absented myself from practically all my classes in order to devote myself exclusively to my task. I soon saw that no progress could be made with the metals as the quantity was much too small to demonstrate it microscopically in the cells. I then learned photography in order to render visible the slightest traces of metal by means of the so-called *renforcement*. This also was a failure, whereupon I said to myself, the only method by which one can actually obtain some insight into the minutest distribution of substances is to inject animals with dyes. A simple look into a microscope must then suffice to see in which cells, in which fibres, the particular colored material is present. I also realized that an investigation of this kind would only be possible if I had an exact knowledge of the chemical behavior of dyes, and thus a purely theoretical, but yet very intensive contact with chemistry was naturally created.

During my third semester after I had passed the *physikum*, I returned to Breslau, but steered clear as far as possible of the temptations of the clinics, internal medicine and dermatology, in order to devote myself exclusively to the clarification of my ideas. At first I worked in the physiological institute of Rudolf Heidenhain, one of the best and most versatile physiologists that we have ever had. The working conditions were excellent and the entire atmosphere there was extraordinarily congenial. We all labored industriously and joyfully, and Heidenhain's mode of work presented us all with a splendid example of acumen and of extreme conscientiousness. I never even touched the subject that Heidenhain had actually given me, but went my own way entirely. Later I worked in Cohnheim's laboratory. Even today I still recall with joy and admiration the memory of this splendid man, the reformer of pathological anatomy, and of the staff that he had gathered about himself. His assistants were Karl Weigert, who at that time had already laid the foundation of his later fame, and Oskar Lassar, and around them had gathered a group of outstanding men from all over the world. I will mention here only Neisser,

Lichtheim, Salomonsen, Welch, Kraske Here too I was again chiefly occupied with stains and staining At that time I was not a particularly useful member of any laboratory, as may be observed from the following two anecdotes

For a short time I had worked in Funke's laboratory where a course in physiological chemistry was given, the climax of which was that the ever successful hemoglobin test was demonstrated on some spot scraped from the floor After I had worked in the laboratory only a short while the test failed every time because of the many dye spots and splashes, and after many years Funke once wrote to Heidenham "The traces of Ehrlich's industry are indelible" In Cohnheim's laboratory things were not much better There I had a table which was completely covered with dyes Robert Koch liked to relate that when he was still district physician at Wollstein and came to Breslau to demonstrate his anthrax work to Ferdinand Cohn and Cohnheim, he went through the laboratory where my table was pointed out to him and he was told "That is little Ehrlich, he is a very good stainer, but he will never pass his examination" In fact I had lost some time due to my preoccupation with this subject, and in consequence I took my final examination a year later than was customary

Nevertheless, this work did bear some fruit I discovered a particular class of cells, the mast cells, which could be demonstrated by means of dyes, and I also found that they could be stained only by means of a certain group of dyes, so-called basic dyes Because of this work, immediately after successful completion of my final examination, I was appointed senior physician of von Frerich's clinic at the Charité

1 8 5 7 — 1 9 3 2

RONALD ROSS

The recent war strikingly brought home to a larger public that "from the standpoint of prevalence, malaria appears to be the most important disease in the world today" It is now common knowledge that this important disease is caused by parasites that circulate in the blood, and that these are transmitted from man to man by certain mosquitoes It is not generally realized, however, that these basic discoveries concerning the nature of malaria were made quite recently The man who discovered the truth beneath the cracked eye-piece of his microscope was Ronald Ross, a surgeon in the Indian Medical Service, who appropriately enough was born at Almara in the Kumaon Hills of India As Ross relates in his *Memoirs* (see below), he had no desire to study medicine He would have preferred to be an artist, but at his father's insistence medicine became his career

In India, Ross became interested in the problem of malaria It was in 1894, while in London, that he met Dr Patrick Manson, who, in 1877, had demonstrated that filariasis was caused by a minute worm, transmitted by the bite of a mosquito from one person to another Manson had formed the hypothesis that mosquitoes

also transmit malaria. On his return to India, Ross set out to test Manson's hypothesis. Finally, after two years of hard work and innumerable disappointments, in 1897, Ross demonstrated that the *Anopheles* mosquito is the transmitter of the malarial parasite (see page 275). This observation solved the fundamental mystery, and provided the clue for the later discoveries in this field. A year later (1898), Ross, working with birds, was able to trace the whole development of the parasite in the mosquito, and, as the final proof, to infect healthy birds by the bite of infected mosquitoes. In 1902 Ross received the Nobel Prize for his work.

In 1899, after eighteen years in the Indian Medical Service, he came to teach at the Liverpool School of Tropical Medicine. At the same time, he was engaged in devising and applying methods of malaria control. In 1926, Ross became director of the Institute that bears his name. A man of wide interests, he made a number of significant contributions to mathematics, composed chamber music, and wrote novels, plays, poetry, as well as a very interesting autobiography.

MY AGE was now seventeen years, and it was time for me to choose a profession. I wished to be an artist, but my father was opposed to this. I wished also to enter the Army or Navy, but my father had set his heart upon my joining the medical profession and, finally, the Indian Medical Service, which was then well paid and possessed many good appointments, and, as I was a dreamy boy not too well inclined towards uninteresting mental exertion, I resigned myself to this scheme, especially because it would give me experience of life in India, with shooting and riding, and also a knowledge of biology and considerable leisure for any other hobbies I might have a mind for. But I had no predilection at all for medicine and, like most youths, felt disposed to look down upon it.

It must have been in 1874 that my father called upon the Warden of the College attached to St Bartholomew's Hospital in London (Dr Norman Moore) to ask his advice as to whether it was necessary for me to go to Oxford or Cambridge before entering the hospital. He was told that it was not necessary—which is to be regretted, as I would probably have "found my feet" sooner at a university without costing my parents much more money. Consequently on 1 October 1874 my father himself delivered me at the Hospital, and I was given a bedroom and a sitting room numbered A₃ in the College, which was rather a mean building looking out upon a mean street appropriately called Little Britain. I was not happy that day.

During the first year we studied chiefly anatomy and physiology. The usual preliminary dislike of dissection soon wore off, but I took little interest in anatomy because it is only a kind of geography of the body—to be learnt by rote. But physiology, histology, and microscope work engaged me more, though still in a far-away manner, because they invoked problems of causation and the wonders of the body's mechanism.

Of course the medical staff of St Bartholomew's were the greatest physicians and surgeons of the age. I remember the admirable lectures of Sir James

Paget—a lean, gentle, intellectual man, and also the stimulating influence of Mr Thomas Smith, the witty and talkative surgeon, who was something like my uncle William Dr Callender was a somewhat dull lecturer on medicine, but cheered us up occasionally. The good students sat upon the front benches near him and the bad ones far back, where they made a noise. “Ah,” he exclaimed, “I have always heard that civilization spreads from a centre outwards.” On another occasion he was describing the colour of a “large white kidney,” while a number of the back-benchers were reposing with their boots on the benches before them. “In fact, gentlemen,” he said, “the colour of a large white kidney is exactly the same as the colour of the soles of those gentlemen’s boots.” But the hero of the hospital, the great Napoleon of Surgeons as we thought him, was Mr Savory, with his fine head, keen but somewhat cynical face, and accomplished dramatic oratory, of whom someone had written on a wall

Great Savory of Bartholomew,
By the nine gods he swore
That, of five-and-twenty candidates,
He’d pluck twenty-four

I was given an introduction to him and became a “dresser” under him, and I was a “clinical clerk” to Dr Callender. In the latter office I was put in charge of my first case of malaria, a tall fierce woman who had caught the infection in Essex—one of the last of such cases which occurred before the recent war. I was interested in the case and questioned her so minutely as to her symptoms that she thought something was wrong, became angry, and left the Hospital “statim”¹—like the man who, according to the Poet Laureate, fled from hospital when he saw the words “ter die” written on his bedhead ticket.

One day (I think it was in the winter 1875-6) we had a most delightful riot. A student threw a snowball at another, missed him, and hit a policeman outside the gates of the hospital, full in the face. The enraged constable entered to seize the culprit, other students defended him, other policemen entered in support, until there were about thirty of them. But they found themselves in a nest of hornets, for we numbered some 300 or more, and one by one the good-humoured limbs of the law were overpowered and thrown out of the hospital gates, which were slammed to after them by the laughing janitors. Unfortunately I did not hear the commotion at first, and thus missed most of the fun—and also the punishments which followed. One red-haired policeman, whom we nicknamed Ginger, lost his temper and suffered badly in consequence.

1867 — 1

VIKENTY VERESSAYEV

Vikenty Vikentyevich Smidovich, who wrote his autobiographical *Memoirs of a Physician* under the pseudonym Veressayev, was born at Tula in 1867. Before studying medicine, he entered the Philological Faculty of the University of St. Petersburg, from which he graduated in 1888. Smidovich then began the study of medicine, and in 1894 received his medical degree at Dorpat. After graduation, he set out to practice in a small country town, but after several months he went off to St. Petersburg for further study. From 1921 on he lived in Moscow.

Veressayev's *Memoirs* present a picture of the medical profession as seen through the eyes of a discouraged and disheartened man. "Conscience is its keynote. It is the reflection of the conscience of a philosopher who has opened the inner doors of the hiding places of science and is bewildered by what he has found." Throughout his account, Veressayev manifests a degree of perseverance and a singleness of purpose which are noteworthy. Similarly, he shows a profound and impressive appreciation of his responsibilities as a doctor.

His description of hypochondriasis in a medical student is characteristic, and the experience is well known to most doctors.

A SMALL mole under my left arm-pit, without any apparent cause suddenly began to increase in size and become painful. I was afraid to believe the evidence of my senses, but it grew and grew, and hurt me more every day. At last the swelling attained the size of a hazel-nut. There was no room for further doubt, the mole had developed into a sarcoma, that terrible *melano sarcoma* which generally originates from innocent-looking beauty spots. I went to attend the consulting hours of our professor of surgery feeling as if I were about to have a final interview with the hangman.

"Professor, I believe . . . I have a sarcoma of the arm," I said in an unsteady voice.

The professor scrutinized me attentively.

"Are you a medical student of the third course?"

"Yes."

"Show me your sarcoma!"

I undressed. The professor removed the growth by severing its narrow stem with a pair of scissors.

"Your sleeve had merely irritated the mole, nothing more. Take your sarcoma with you as a keepsake!" he said, smiling good-naturedly and handing me a small fleshy pellet.

I went away happy, although much ashamed, and I felt abashed at my childish apprehensiveness. But soon afterwards I began to notice that something abnormal was taking place within me. I experienced a general lassitude and distaste for work, I lost my appetite and I constantly suffered from thirst.

I lost flesh too, and every now and then abscesses formed on different parts of my body, I passed water very abundantly, I tested it for sugar—it contained none. All these symptoms pointed to *diabetes insipidus*. In deep dejection I perused the chapter devoted to that disease in Strumpell's text-book. "The causes of *diabetes insipidus* still remain quite obscure. Most sufferers are either young or of middle age, men are somewhat more subject to the disease than women. The relationship between this disease and diabetes proper is obvious, and the one has been known to pass into the other. The disease may continue for years and even decades, and cures are extremely rare."

I went to our professor of therapeutics. Without telling him of my fears, I simply detailed my symptoms. As I proceeded the professor's brows contracted more and more.

He cut me short.

"You suppose that you have *diabetes insipidus*. It is very praise-worthy that you should have studied Strumpell so painstakingly, you have not omitted a single symptom. I hope you will be as well up in the subject when the examinations come round. Smoke less, eat more, take more exercise and leave off thinking of diabetes."

On my arrival in St. Petersburg I registered for the courses at the Helena Clinical Institute. That institution is specially intended for medical men who are anxious to perfect themselves further. After a brief attendance, however, it was borne upon me that I would derive but little from those courses, for the system was identical with that existing at the University, once more we were allowed to look on *ad infinitum* and there the matter ended. I considered that I had done so quite sufficiently as it was. These lectures are very useful to doctors who have already been long in practice and accumulated many questions demanding an answer, but for us beginners they were of small value, we chiefly stood in need of hospital work under the direction of experienced mentors.

I began to hunt for a suitable position. I would have been satisfied with the wretchedest pay, for my ambition did not go beyond what would suffice to keep me in bread and cheese and from sleeping on the doorstep—for I had no private means whatever.

I visited all the hospitals in turn, interviewed all the chief-physicians, they received me with cold nonchalant civility, invariably informing me with a superior smile that there were no vacancies, explaining further that I was mistaken in thinking it were possible to obtain a salaried hospital appointment for the mere asking. Soon I myself understood plainly how *naïve* such hopes had been.

In every hospital dozens of doctors work gratis, those who aspire to the beggarly pay of house physician must wait from five to ten years, the majority do not even expect anything of the kind, and give their services in exchange

for that which their colleges ought, but have failed, to supply Various corporations avail themselves widely of the advantages to themselves resulting from such a state of affairs, especially our municipalities, which accordingly exploit the faculty to an incredible extent It is not the same everywhere, however The Copenhagen municipality helps to serve the end of medical education by liberally distributing appointments among young doctors, in the city hospitals, at the same time cutting down the term of service to two years, so as to make room for fresh candidates Throughout France the municipal hospitals likewise act in the same liberal spirit While in 1894 one of the members of the Town Council of St Petersburg proposed that the salaries of the physicians of the municipal hospitals be entirely withdrawn, because there would always be a sufficient number of applicants content to give their services gratis "Doctors," he declared, "ought to be glad of being given mere access to the hospitals"

I gave up all hope of obtaining a salaried position and entered myself at one of the hospitals as a "Supernumerary" I often found myself in the greatest want in the evening I used to trim the "fringes" of my trousers and mend the rents in my boots with black thread, I used to envy my patients when ordering them extras, because I myself subsisted mainly on bread and cheap sausage During those hard times I experienced and came to understand a phenomenon which was formerly quite beyond my comprehension—how one could take to drink through hunger

At that period, whenever I passed a public-house, it had an irresistible attraction for me, at such moments I used to think that it was the height of bliss to step up to the brilliantly illuminated bar, covered with tempting "zakouskas," and to toss off a glass or so of vodka, strange to say, half-starved as I was, the spirits attracted me more than the eatables, although I was never a dipsomaniac When I had a rouble in my pocket, I could not resist the temptation, and got drunk Never before or after, when I was properly nourished, did vodka have any fascinations

There was a great deal of work at the Infirmary, and it was plain to me that my labour was simply *indispensable* to the hospital, the amiability extended to me, whereby I was "allowed" to perform my duties, being of the same order as the philanthropy of the contractor who "gives bread" to his workmen, only with this difference the bare permission to work was all the pay I received for *my* services When I returned home dead beat and broken, after a sleepless vigil, and cogitated profoundly as to the most nourishing dinner that could be procured for eight kopecks (4 cents), I used to be seized with rage and despair, to think that in return for this drudgery I could not even claim the right to be decently fed! And I would begin to repent having thrown up my practice and come to St Petersburg Billroth says that only a doctor without a drop of conscience can permit himself without more-a-do to make use of the rights which his diploma gives him But who were to blame?

Not we! It was the public's fault that we had no other alternative open to us—so let them pay the piper!—I thought vindictively

In addition to my regular hospital duties, I continued to attend certain lectures at the Clinical Institute and also worked in other hospitals. And everywhere the scant consideration given to our doctor's diplomas, "with all the rights and privileges appertaining to that calling according to the law," by the medical world, became more and more apparent

1856 — 1939

SIGMUND FREUD

The medical revolution initiated by Sigmund Freud with the concept and method of psychoanalysis is still not finished, and no attempt will be made here to tell the story of the psychoanalytic movement. His life is extremely instructive, however, and is perhaps the best introduction to these developments.

Freud was born in 1856 at Freiberg, a small town in Moravia, then part of Austria-Hungary. Most of his life was spent in Vienna, but he died in London, having been exiled by the Nazis. Freud began his career as a laboratory worker. At first, he devoted himself to the anatomy and physiology of the nervous system, but later turned to clinical neurology. In 1885 he went to Paris, where he studied with Charcot, and in 1886 he entered private practice in Vienna. At the Salpêtrière Hospital in Paris, Freud had witnessed the use of hypnotism for the treatment of mental illness, and he was also acquainted with the work done in Nancy by Bernheim.

Together with Josef Breuer, a general practitioner in Vienna, Freud employed hypnotism to treat a hysterical patient. In 1895 Freud and Breuer reported their results in a book called *Studies on Hysteria*. They found that in the hypnotic state the patient talked freely about repressed mental conflicts, and that this emotional discharge helped the patient. Freud continued these studies alone, and found that he could dispense with hypnosis and suggestion. By free association, and prolonged analysis of what the patient said, the cause of the patient's trouble could be revealed. This method of analyzing and interpreting what the patient said and did was called psychoanalysis.

It is impossible to consider in detail the contributions of Freud to psychology and psychiatry, but it may be said that his work has had a greater effect on human thought in the past fifty years than any other discovery in the whole history of mental science.

The story of Freud's student days up to the time of his visit to Charcot is simply and revealingly told in the following selection from his autobiography.

I WAS born on May 6th, 1856, at Freiberg in Moravia, a small town in what is now Czecho-Slovakia. My parents were Jews, and I have remained a Jew myself. I have reasons to believe that my father's family were settled for a long time on the Rhine (at Cologne), that, as a result of a persecution of the Jews during the fourteenth or fifteenth century, they fled eastwards, and

that, in the course of the nineteenth century, they migrated back from Lithuania through Galicia into German Austria. When I was a child of four I came to Vienna, and I went through the whole of my education there. At the Gymnasium I was at the top of my class for seven years, I enjoyed special privileges there, and was scarcely obliged to pass any examinations. Although we lived in very limited circumstances, my father insisted that, in my choice of a profession, I should follow my own inclinations. Neither at that time, nor indeed in my later life, did I feel any particular predilection for the career of a physician. I was moved, rather, by a sort of curiosity, which was, however, directed more towards human concerns than towards natural objects, nor had I recognized the importance of observation as one of the best means of gratifying it. At the same time, the theories of Darwin, which were then of topical interest, strongly attracted me, for they held out hopes of an extraordinary advance in our understanding of the world, and it was hearing Goethe's beautiful essay on Nature read aloud at a popular lecture just before I left school that decided me to become a medical student.

When, in 1873, I first joined the University, I was met by some appreciable disappointments. Above all, I found that I was expected to feel myself inferior and an alien, because I was a Jew. I refused absolutely to do the first of these things. I have never been able to see why I should feel ashamed of my descent or, as people were beginning to say, of my race. I put up, without much regret, with my nonadmission to the community, for it seemed to me that in spite of this exclusion an active fellow-worker could not fail to find some nook or cranny in the framework of humanity. These first impressions at the University, however, had one consequence which was afterwards to prove important, for at an early age I was made familiar with the fate of being in the Opposition and of being put under the ban of the "compact majority." The foundations were thus laid for a certain degree of independence of judgment.

I was compelled, moreover, during my first years at the University, to make the discovery that the peculiarities and limitations of my gifts denied me all success in many of the departments of science into which my youthful eagerness had plunged me. Thus I learned the truth of Mephistopheles' warning

"Vergebens, dass ihr ringsum wissenschaftlich schweift,
Ein jeder lernt nur, was er lernen kann."

["It is in vain that you range around from science to science
each man learns only what he can learn " (Faust, Part I)]

At length, in Ernst Brücke's physiological laboratory, I found rest and satisfaction—and men, too, whom I could respect and take as my models. Brücke gave me a problem to work out in the histology of the nervous system, I succeeded in solving it to his satisfaction and in carrying the work further on my own account. I worked at this Institute, with short interruptions, from 1876 to 1882, and it was generally thought that I was marked out to fill the

next post of Assistant that might fall vacant there. The various branches of medicine proper, apart from psychiatry, had no attraction for me. I was decidedly negligent in pursuing my medical studies and it was not until 1881 that I took my somewhat belated degree as a Doctor of Medicine.

The turning point came in 1882, when my teacher, for whom I felt the highest possible esteem, corrected my father's generous improvidence by strongly advising me, in view of my bad financial position, to abandon my theoretical career. I followed his advice, left the physiological laboratory and entered the General Hospital as an "Aspirant." I was soon afterwards promoted to being the junior physician, and worked in various departments of the hospital, amongst others for more than six months under Meynert, by whose work and personality I had been greatly struck while I was still a student.

In a certain sense I nevertheless remained faithful to the line of work upon which I had originally started. The subject which Brücke had proposed for my investigations had been the spinal cord of one of the lowest of the fishes (*Ammocoetes Petromyzon*), and I now passed on to the human central nervous system. Just at this time Flechsig's discoveries of the non-simultaneity of the formation of the medullary sheaths were throwing a revealing light upon the intricate course of its tracts. The fact that I began by choosing the medulla oblongata as the one and only subject of my work was another sign of the continuity of my development. In complete contrast to the diffuse character of my studies during my earlier years at the University, I was now developing an inclination to concentrate my work exclusively upon a single subject or problem. This inclination has persisted and has since led to my being accused of onesidedness.

I now became as active a worker in the Institute of Cerebral Anatomy as I had previously been in the physiological one. Some short papers upon the course of the tracts and the nuclear origins in the medulla oblongata date from these hospital years, and my results were regularly noted down by Edinger. One day Meynert, who had given me access to the laboratory even during the times when I was not actually working under him, proposed that I should definitely devote myself to the anatomy of the brain, and promised to hand over his lecturing work to me, as he felt he was too old to manage the newer methods. This I declined, in alarm at the magnitude of the task, it is possible, too, that I had guessed already that this great man was by no means kindly disposed towards me.

From the practical point of view, brain anatomy was certainly no better than physiology, and, with an eye to material considerations, I began to study nervous diseases. There were, at that time, few specialists in that branch of medicine in Vienna, the material for its study was distributed over a number of different departments of the hospital, there was no satisfactory opportunity of learning the subject, and one was forced to be one's own teacher. Even Nothnagel, who had been appointed a short time before, on account of his

book upon cerebral localization, did not single out neuropathology from among the other subdivisions of medicine. In the distance glimmered the great name of Charcot, so I formed a plan of first obtaining an appointment as Lecturer on Nervous Diseases in Vienna and of then going to Paris to continue my studies.

In the course of the following years, while I continued to work as junior physician, I published a number of clinical observations upon organic diseases of the nervous system. I gradually became familiar with the ground, I was able to localize the site of a lesion in the medulla oblongata so accurately that the pathological anatomist had no further information to add, I was the first person in Vienna to send a case for autopsy with a diagnosis of polyneuritis acuta. The fame of my diagnoses and their *post mortem* confirmation brought me an influx of American physicians, to whom I lectured upon the patients in my department in a sort of pidgin-English. I understood nothing about the neuroses. On one occasion I introduced to my audience a neurotic suffering from a persistent headache as a case of chronic localized meningitis, they quite rightly rose in revolt against me, and my premature activities as a teacher came to an end. By way of excuse I may add that this happened at a time when greater authorities than myself in Vienna were in the habit of diagnosing neurasthenia as cerebral tumor.

In the spring of 1885 I was appointed Lecturer on Neuropathology on the ground of my histological and clinical publications. Soon afterwards, as the result of a warm testimonial from Brucke, I was awarded a Traveling Fellowship of considerable value. In the autumn of the same year I made the journey to Paris.

I became a student at the Salpêtrière, but as one of the crowd of foreign visitors, I had little attention paid me to begin with. One day in my hearing Charcot expressed his regret that since the war he had heard nothing from the German translator of his lectures, he went on to say that he would be glad if someone would undertake to translate the new volume of his lectures into German. I wrote to him and offered to do so, I can still remember a phrase in the letter, to the effect that I suffered only from *l'aphasie motrice* and not from *l'aphasie sensorielle du français*. Charcot accepted the offer, I was admitted to the circle of his personal acquaintances, and from that time forward I took a full part in all that went on at the Clinic.

1875 —

ALBERT SCHWEITZER

Philosopher, theologian, musician and author, Albert Schweitzer was of mature years when he took upon himself the task of going to Africa, as a doctor to the Negro. This decision, however, was the fruition of many years of development. It grew out of his reflections on the right to happiness. When he arrived at his

decision, Schweitzer was *privat-dozent* in the University of Strassburg, and had gained distinction as an organist in Paris and Barcelona. He now began to study medicine at Strassburg, and was in his latter thirties when he received his medical degree. At the same time, his wife qualified as a nurse. Schweitzer's volumes on Johann Sebastian Bach, which were translated into a number of languages, brought him the royalties that helped to make possible his African experiment. In 1913, he and his wife left Alsace behind and journeyed to the forests of Africa to devote themselves to the welfare of the native inhabitants.

THE thought, that I was being allowed to enjoy such a uniquely happy youth, occupied me constantly. It almost oppressed me. Even more clearly there arose before me the question, whether I ought to accept this happiness as something self-evident.

Thus the problem of the right to happiness became my second great experience. As such, it ranged itself alongside the other experience—that of being affected by the woe and pain that exists all around us in the world—which had accompanied me since my childhood. These two experiences gradually merged, and thus decided my conception of life and my fate.

It became ever clearer to me that I did not have the inner right to accept my happy youth, my health and my energy for work as something self-evident. Out of the profoundest feeling of happiness there gradually developed within me an understanding of the word of Jesus, that we are not permitted to keep our life for ourselves. Whoever has received much that is good and beautiful in life, must give up an equivalent in return. Whoever has himself been spared pain, must feel a calling to help assuage the pain of others. All of us must participate in bearing the burden of grief that rests upon the world.

Obscurely and confusedly this idea developed within me. Sometimes it left me for a while, so that I breathed a sigh of relief and thought that I was again complete master of my life. A small cloud had arisen on the horizon. For a time I was able to overlook it temporarily, but it grew gradually and irresistibly, and finally covered the entire sky.

The decision was made when I was twenty-one years old. At that time, as a student during the Whitsun holiday, I decided that up to my thirtieth year I would devote my life to the pastorate, science and music. Then after having achieved in science, and music what I intended to do, I wanted to enter upon a path of immediate service to mankind. What this path should be, I intended to discover in the interim from the surrounding circumstances.

The decision to dedicate myself to the work of medical aid in the colonies, was not my first one. It appeared only after I had previously occupied myself with other plans and had given them up for various reasons. A concatenation of circumstances indicated to me the way to the lepers and sleeping sickness victims of Africa.

I gave up my teaching position at the University of Strassburg, my organ

playing and my literary activity to go to Equatorial Africa as a doctor How did this come about?

I had read of the physical afflictions of the jungle natives, and had heard about them from missionaries The more I thought this over, the more incomprehensible it appeared to me that we Europeans should take so little interest in the great humanitarian task which presented itself to us in those distant parts It seemed to me that the parable of the rich man and poor Lazarus applied to us We are the rich man because we, as a result of medical progress, possess extensive knowledge and many therapeutic remedies against disease and pain We accept the immense advantages of this wealth as something self-evident Out in the colonies, however, sits poor Lazarus, the colored man, who is subject to disease and pain as much as we are, indeed, even more than we, and has no means with which to combat these ills We act like the rich man who, out of thoughtlessness, sinned against the poor man in front of his door, because he was unable to place himself in the other's position, and to let his heart speak

The few hundred doctors, I said to myself, whom the European states keep in the colonial world as government physicians, can deal only with a very small part of the tremendous task, especially as most of them are primarily intended for the white colonists and for the troops Our society must recognize the humanitarian task as its task The time must come when volunteer physicians, sent and supported by society, will go out into the world in large numbers and do good among the natives Only then will we have begun to recognize and to carry out the responsibility which we as civilized men have toward the colored people

Motivated by these ideas, I decided at the age of thirty to study medicine and to test the idea out in the world of reality At the beginning of 1913 I received my medical doctorate In the spring of the same year, I together with my wife, who had learned nursing, set out for the Ogowe in Equatorial Africa to begin my activity there

I had picked this region because Alsatian missionaries in the service of the Paris Evangelical Missionary Society had told me that a doctor was badly needed there, particularly because of the sleeping sickness which was becoming more and more prevalent This Missionary Society declared its readiness to make available one of the houses at its Lambarene Station, and to permit me to build a hospital there on its land, with a possibility that they might be able to help

However, I had to furnish the financial means for my work I gave to it what I had earned with my book on J S Bach, which was published in three languages, and through organ concerts Thus the organist of St Thomas's in Leipzig also helped to build the hospital for Negroes in the jungle Dear friends from Alsace, France, Germany, and Switzerland helped us with funds When I left Europe my enterprise was secure for two years I had estimated

the costs for the year—not including the trips going and returning—at about fifteen thousand francs, which proved to be approximately correct

Thus, as the scientific expression goes, my work lived in symbiosis with the Paris Evangelical Missionary Society. In itself, however, it was non-demoninational and international. It was and still is, my conviction that the humanitarian tasks in the world must be brought home to man as such, and not in his capacity as a member of a specific nation or confession.

1859 — 1939

HAVELOCK ELLIS

Like so many of his predecessors in this section, Havelock Ellis apparently had no burning desire to study medicine. For very brief periods, he thought of an ecclesiastical or a legal career, and while in Australia he was actually a teacher, but none of these was to be the sphere of his work. The question of a career was decided for him by the reading of a life of James Hinton (see page 410). With this, the decision was made and the die was cast, nor did he later swerve from this path—upon which he set his feet. One may wonder whether Ellis actually made up his mind on the spur of the moment, may it not have been that his mind had unconsciously been prepared for such a decision?

EVER since I had left school—and even before—I had never had the slightest idea how to gain my living. I never felt the faintest real vocation for any course of life. If asked what I would like to be, I could only have answered as Diderot answered in youth, 'Mais rien, mais rien du tout'. With me, as with Diderot, a creature of superabundant energy, this was far from meaning laziness or indifference. It was merely the mark of one whose temperament is too obstinately aboriginal to be fitted into one of the existing frameworks of life. I was most anxious and worried over the matter. My mother had once suggested that being fond of books, I might be a bookseller, but that idea had not the slightest attraction for me, indeed, none of the families I proceeded from, except the Olivers, had ever been drawn to business, or made any success in business, and in books as books, moreover, I never took an interest. It might possibly be said that it was by an unconscious atavistic impulse—I knew nothing then of my remote ecclesiastical ancestry—that the first profession I ever thought of entering, when about the age of fifteen, was the Church. The idea was, in fact, most likely the natural outcome of my own religious attitude and environment, and the fact that my friend Mackay was at that time preparing to become a clergyman. But it was a career for which I was in every respect singularly unsuited, and the idea, which never took deep root, was soon effaced when shortly afterwards I lost my

early faith in Christianity The occupation of teaching which I had fallen into on reaching Australia was as unsuitable for me as the Church, and from the first I merely adopted it as a temporary resource I never had any wish to devote myself to teaching and I have always been rather sceptical about what is falsely called 'education' At some time in Australia I believe that the idea of a legal career floated passingly across my mind, but for me it was as absurd as any of the others My future career in life remained a puzzling and painful problem to which I could never see any solution

The question was still in that position, when, a few weeks after the experience I have just told, I began to read the *Life and Letters of James Hinton* by Ellice Hopkins, and by a strange chance Hinton was fated to have as decisive an influence on my practical work in life as already on my spiritual welfare I was still in the first chapter of the book, reading as I lay—it was sometimes my position when tired after the day's work—full length on the hard bench in my schoolroom, on which I usually sat in the absence of a chair, a position more or less horizontal is always with me the most favorable to mental activity As I read, in completely calm and disinterested manner, I came to that point in the narrative where it is stated that on the advice of the family doctor it was decided that young James should enter the medical profession, as giving the necessary scope to his mental activity, and was accordingly placed at Saint Bartholomew's Hospital Medical School, having just reached his twentieth year, the age I had myself then almost reached Suddenly I leapt to my feet as though I had been shot 'I will become a doctor!' a voice within me seemed to say Therewith, in that instant, the question that had worried me for so many years was once and for all decided On the conscious plane, difficult problems, especially if of a practical nature, are only settled in my mind with the greatest hesitation and much swaying back and forth between the arguments on this side and on that, and even to the end I remain uncertain, although, when once the decision is made, I doubt no more and never turn back But now, in settling the greatest practical question of life, I settled it in an instant, without even any deliberation at all—for the idea of becoming a doctor had never before so much as entered my head—and settled it so finally that I never once called my decision in question

I quickly realized that the career of an ordinary medical practitioner had no attractions for me As soon as I began to reflect on the meaning of that sudden conviction, I saw that the main reason why I wanted to be a doctor was not because I wanted a doctor's life, but because I needed a doctor's education A doctor's career was not my career, but a doctor's training was the necessary portal to my career Therein I was entirely right I might have been tempted to say, like some clever and brilliant people I can think of, that of the things I wanted to know medicine had little to teach and that I could best work in complete independence of traditional investigation I was fortunately saved from that fate by a primitive trait of my mental constitution My most revolutionary impulses are combined with an equally

strong impulse to reverence tradition and seek out its bases. Just as I could not undertake to study the revolutionary Rabelais without investigating the whole history of the fifteenth century, so I could not reach my own new conception of sex without studying the established conventions of medical science. It has been fortunate for me that it is so. If I had not studied medicine from the beginning, if I had not been a duly accredited practitioner in medicine, surgery, and midwifery, I could never have gained a confident grasp of the problem of sex, I could never have set forth my own personal investigations and results in the volumes of my *Studies*, and I could never have found a decent firm to publish them. I should have spent my days in an almost helpless struggle, and my life-blood would have been drunk by the thirsty sands of time. I should have dropped and left no mark. By adopting the medical profession I acquired the only foundation on which I could build my own work.

1876—

ROSALIE SLAUGHTER MORTON

The career of Dr. Morton presents vividly the transition period for women in medicine, between the pioneers, such as Elizabeth Blackwell, and the women doctors of today. Hers was the first generation following the pioneers. There was still considerable opposition to women in medicine, and the road was not an easy one. Nevertheless, against the determined opposition of her family, Rosalie Slaughter set out on a medical career.

After studying at the Women's Medical College in Philadelphia, Dr. Morton went abroad, in 1899, to Berlin, and later to Vienna, Paris and London. During her three years in Europe she met many notable and interesting persons. Conversations with Tolstoy, comments on Ibsen, and impressions of a number of great medical men are valuable documents.

On her return to the United States, she began to practice her profession in Washington, and was the first woman to undertake surgery there. During the First World War in 1916, Dr. Morton saw active service in France and on the Salonika front. Later she was active in Serbia.

Although busily engaged as a surgeon, she found time for the humanitarian side of medicine and for public health problems. In her autobiography, *A Woman Surgeon*, Dr. Morton gives a colorful account of her many-sided career.

IN MY childhood doctors always seemed to me the highest type of human beings. They of all people, I thought, must be thoroughly good and constructive—their lives were dedicated to helping human life and comfort. I idolized my two brothers who were doctors, and the old physicians in Lynchburg whom I knew won my devoted respect. Doctor Dulaney and Doctor Latham and every other doctor were living forms of kindness, it seemed to emanate from their eyes, their fingers and their smiles. Knowing these men, I could

not ever imagine that there could exist medical men who would quibble over fees, or chase ambulances, or go out to play golf after they had operated on a patient. These old doctors, despite the lack of our modern knowledge, brought profoundly healing self-sacrifice to their work. From the first day that I thought seriously about studying medicine, I held the profession in the highest idealism. To sign over one's life to the dedication of human needs there could be no finer life to live!

And so, inwardly ablaze with this desire, I met the opposition of my family. At first, partly because I felt I would thus prepare for bigger things, and partly because I thought my parents would be less scandalized, I told my mother I would like to become a nurse. She neither argued nor discouraged, merely observing dispassionately that I ought first to ascertain the requirements. She knew that no hospital would be likely to accept a girl of sixteen.

I suspect that I appeared inadequate to a critical eye, certainly, having to send my photograph handicapped my ambition. I was not pampered nor frivolous, but all my photographs, taken in party dress, made me look like a fragile gardenia. Having been educated in Quaker honesty, I was too scrupulous to detour the matter of my age. However, I penned earnest notes, emphasizing my serious-mindedness and asking for application blanks, these I duly filled in and sent, accompanied by a letter from my pastor, to the superintendent of schools of nursing far and wide. Whenever I eagerly tore open a long envelope with a hospital address in the corner and then remarked nonchalantly that it contained nothing of importance, a quiet Quaker smile circled my mother's lips.

Unvanquished, I kept on trying, until I finally confessed to my mother that I really did not want to make a life-work of nursing. What relief showed in her eyes!

"That would be just to get started," I added, "I really intend to be a doctor, like the boys."

Dismay blanched her face. Her placidity about my nursing notion had not prepared me for the distressed voice and anxious eyes with which she rejected my choice of a career.

First she urged serious objections—all protective. I would move in constant danger of contagion. I would be at the beck and call of rude, uncouth people, I would walk alone on the streets at night, exposed to every wild danger. None of these difficulties seemed insurmountable to me, I declared. But she could not bear the thought of my serving all sorts of people in clinics and hospitals, she did not wish the walls of my sheltered life to tumble and admit struggle, knowledge, and hardship. I realize now that she thought me too impressionable to come face to face with life—and death.

To all her objections, I replied that I would need less courage to face those dangers, fancied or real, than Joan of Arc had in becoming a soldier!

Surely we both lost our sense of humor, for my distraught mother exclaimed, "But my child, *she* was a peasant! And *she* was burned at the stake!"

Then we had a heart-to-heart, will-to-will talk. All the family, she warned, would oppose the idea. Most of all, my father. Well, I would ask him. She suggested that I wait a few days, since he was far from well. But I wished to have the matter out.

He blinked at me, then scowled and tapped the arm of his chair. He spoke kindly as my mother had, understanding now how he felt, I honor him for his point of view, then it seemed unreasonable.

"I do not want my daughter to earn money," he said firmly. "It is not right that you should go into competition with those who need to support themselves. A gentleman's daughter does not work for money, your field of service is to keep on making us happy, and later to marry a man of your own class. It is essential that society's standards be maintained. You will bring up your children with the highest ideals, your home will be a center of culture, helpfulness, and happiness, as this one is, your highest duty is to become a good wife and mother."

Tears of vexation filled my eyes. He took my trembling hands in his, "I would feel that all my efforts as a lawyer, banker, citizen and father were defeated if my daughter prepared herself to go to work. It is unthinkable that you should do so!"

I set my chin and urged, "Please understand, do try. It isn't that I want money. I just want to be of some real use in this world. I am sure that a doctor can do a great deal of good. I am now almost seventeen and that is quite old."

Ignoring this outburst my father continued quietly, "Archer B—came to see me yesterday. He would like to pay his addresses to you. Your sister married when she was very young. Give a thought to Archer, he is a fine man and will take good care of you, my daughter."

We stood on opposite sides of a chasm. I realized that the gap would widen. He would not comprehend my surging desire to plunge forward, putting all that was best in me into the swiftly progressing stream of science. How could he know that my feet were seeking new paths? Our conversation drained the blood from his head, he turned pale. Intuitively it struck me that he had not long to live. Raising a flag of truce, then, I temporarily abandoned the hope I still cherished, until I might see his attitude weaken, or until it might never offend him if I became that horror of the conservative, "A new woman."

My brothers, too, held steel-like opinions upon the subject of my studying medicine. There were four living at home—only one approved of my project. And so, to allow the dust of family battle to settle, I decided to visit my sister, Edith, who had accepted my father's advice and was now the mistress of her own home in Charlottesville.

She had married a dashing, brilliant lawyer, Richard Thomas Walker Duke, Jr., of Albemarle County, who on a trip to Europe had received much more attention than he deserved by a trick of punctuation when he signed the

hotel register, "Thomas, Duke of Albemarle" Their children heightened my pride when they called me "Aunt Rose" I felt old enough to have a mind of my own!

Meanwhile, the cannon-fire did not cease at home My oldest brother, Charlie, wrote from Duluth, where he had moved several years before, that if I graduated in medicine I could come out and practise with him Aunt Sue wrote that inasmuch as my mother had married somewhat against her family's wishes, she didn't see why I shouldn't choose a medical education My Quaker grandmother, she recalled, was on record as having said, "If women had studied medicine when I was a girl I would have done so" This slim measure of support gave me increased determination

And then I had to hurry home to be at my father's side during his last illness

Of course, he thought that I would and should marry, and that my husband would dutifully provide for me Such was paternal reasoning in his day Consequently his will made no provision for me It was drawn in such a manner that after providing for my mother, most of his money passed to his sons and to his grandchildren Since he had given my sister a generous "marriage portion," some of my relatives urged that I break what seemed an unjust will But I was too proud And also glad, for it signalized freedom I felt that now, sink or swim, I would force my allowance to carry me through college

1873 — 1945

S JOSEPHINE BAKER

S Josephine Baker was born in 1873 at Poughkeepsie, New York When she was sixteen, her father died, leaving his family in financial straits, and she felt it her duty to earn a living for her mother, sister and herself In her autobiography, Josephine Baker found it difficult to recall what led her to choose medicine as a career However, like her predecessor, Elizabeth Blackwell, the disapproval that she encountered, when she first announced her intention, only made her purpose firmer

In 1894 Josephine Baker entered the Woman's Medical College of the New York Infirmary for Women and Children After graduating in 1898, she interned for a year in the New England Hospital for Women and Children in Boston On her return to New York she entered the general practice of medicine Her income during the first year was so meager that when an opportunity appeared to augment it by accepting an appointment as medical inspector in the municipal health department, she did so In 1902 a reform administration took over the government of New York City, and Dr Baker was given the job of hunting out and caring for sick babies (see pages 229-231) Experiences in the New York slums led her to develop the concept of preventive child hygiene, and in 1908 she obtained an opportunity to test it The success of this experiment led to the creation in the same year of the Bureau of Child Hygiene in the New York City Health Department,

with Dr Baker as its Chief Under her leadership the Bureau flourished, and the lives of babies and children were saved

As a result of her endeavors, Dr Baker was consulted by states and municipalities wishing to set up agencies for child hygiene In fact, there was hardly a movement connected with the welfare of children which she did not actively support Dr Baker had promised herself to retire when all forty-eight of the United States had organized a bureau of child hygiene When this occurred in 1923, she kept her word For several years afterward, however, she acted as consultant to the New York State Health Department and the Children's Bureau of the Federal government She died in 1945 *Fighting for Life*, the title of her autobiography, indicates in the briefest possible compass the contribution of this outstanding woman to the conservation of the greatest asset of any nation—its children

I WISH I could remember what made me choose medicine as a way of earning my living—for that is the conscious commercial attitude I had toward it at that time I expect that even then I did not know my motive very clearly Many years afterward, a newspaper reporter interviewed me for hours in an effort to get a story which would give some definite starting point to my career He did not do so badly after all, for the completed article when published filled three columns of newspaper space His conclusion was that an injury to my knee, which kept me on crutches for over two years, had developed in me a tremendous respect for the profession of medicine and a not-to-be-denied yearning for a medical education To be exact he wrote "If little Josephine Baker had not hurt her knee, 90,000 babies now alive would have died" I have the utmost respect for the Fourth Estate and in my years of Health Department work learned to know intimately many of those splendid fellows—of both sexes—and I know what "copy" means to a reporter But I have a profound conviction that he was wrong I did have a deep affection for the doctors who took care of me during that time They were father and son, "old" Dr Lewis Sayre and his son Dr Lewis H Sayre The old doctor was New York's most celebrated orthopedist He was the stiffest, most fiercely starched, the sternest and most likable martinet who ever practiced medicine His older son was a gentle edition of his father With the third son, Dr Reginald Sayre, they formed an unforgettable trio in the best of the old medical tradition But no one could have been more acid or more profoundly skeptical of women doctors than old Dr Sayre was When I once diffidently mentioned to him that I was thinking of studying medicine, the atmosphere was sulphuric with his comments He ruthlessly discouraged me as did our own family physician Dr John Kinkead But later Dr Kinkead, for whom I had a great admiration and affection, was a loyal, devoted friend who helped me over many bad places

It was strange, I had known only one woman doctor at all well—Dr Kate Jackson I had barely heard that there were such people but was quite aware that the world did not wholly approve of them I was to be in no sense a pioneer in the study and practice of medicine But in my sheltered life medical

women were such rare and unusual creatures that they could hardly be said to exist at all. There was no medical tradition on either side of my family. There were lawyers but no doctors. And both sides of the family were aghast at the idea of my spending so much money in such an unconventional way. It was an unheard of, a harebrained and unwomanly scheme. At first my mother too was rather overwhelmed at the idea, but she trusted me, and she made a gallant surrender. "If you really think you should, Jo," she said, "go ahead. I'll try not to fret too much about it." Besides she had been through this sort of perplexity herself, it had taken a good deal of courage and determination to uproot oneself from a little town and experiment with a newly-founded women's college in 1861.

My only explanation of the mental process that led me to my decision is that the study of medicine did occur to me, rather casually, from my long association with the Doctors Sayre, and that later, when I encountered only argument and disapproval, my native stubbornness made me decide to study medicine at all costs and in spite of everyone. That is, after all, hardly a rational way to choose one's life work and yet, in a curious way, it seems to hold the secret of whatever success may come to one in later life. I am thoroughly convinced that obstacles to be overcome and disapproval to be lived down are strong motive forces. Years afterward, when I came into intimate contact with what has been called "the submerged tenth," I knew that this was true. The children of the rich and well-to-do with the way made easy for them have a hard and difficult road to travel, the children of the poor and underprivileged, battling against disabilities all their young lives, not only have a great incentive but are so used to hardships and discouragements that the future way may seem almost unbelievably easy. Everyone can see innumerable examples of the handicap of wealth and the stimulus of poverty. In my case the need of such future outlet was imperative. My choice of medicine as a career turned out rather better than I deserved, for I was to learn that this profession demands not only stubbornness but a devotion so wholehearted that it amounts to absolute consecration.

Perhaps that is a little too farcical to be real irony. But irony is certainly present in the fact that the one subject I failed in medical school was to be the foundation of my life-work. This was related to a course, during my sophomore year, on "The Normal Child," given by Dr. Annie Sturges Daniel, a pioneer woman physician who is loved and honored by every student who came under her influence. Dr. Daniel's course was an uncharted sea and I had no interest in it, neither had anyone else so far as I could discover except Dr. Daniel herself. No other college had such a course and anything normal seemed far removed from the subjects that medical colleges had to teach in those days. There was, naturally, no textbook on the subject, with one minor exception which did not seem either interesting or informative. There were

Dr Daniel's lectures, to be sure, but they seemed to have little bearing upon the future career of a would-be doctor. It was a subject far in advance of the time and Dr Daniel had practically invented it herself, believing as she did that no doctor could be reasonably intelligent about abnormal children until he, or she, knew what the normal child might be like. The intellectual soundness of that position left my callous young mind cold and disinterested and, as a result, I "flunked" that course because I had done no work in it at all.

That was my first, and only, failure. It not only gave a severe jolt to my pride but roused in me a fierce anger at having to take the course over again the following year. I made up my mind that, stupid as it might seem, I intended to learn all there was to know about the normal child. I took voluminous notes on the lectures, I read everything I could find that had the slightest relation to the subject, combing all the available libraries for scraps of information about that unusual phenomenon. The lectures, I discovered, once I started listening to them, were very fine, the bits of sought-out information most intriguing. As a result, that little pest, the normal child, made such a dent on my consciousness that it was he, rather than my lame knee, who is undoubtedly responsible for the survival of those 90,000 babies the reporter mentioned. The whole procedure of preventive hygiene which I was later to install in modern child care certainly had its inspiration in that half-year of pique and hard work. Everything that Dr Daniel taught me in 1895 is still truer than ever in 1939. Neither she nor I had any idea that she was preparing me for thirty years of child welfare crusading. But, when the opportunity came, I was ready and eager for it and I, as well as the babies, owe a debt of gratitude to Dr Daniel which I can never repay.

1869 —

ALICE HAMILTON

The admission of women to the study of medicine came later in Europe than in the United States. Switzerland, in 1876, was the first European country to do so. Germany did not readily adopt this innovation, so that when Alice Hamilton and her sister Edith went to Germany in 1895 to study, they were admitted to the universities of Leipzig and Munich, only after complicated negotiations. The upshot of the matter is related by Dr Hamilton in the following delightfully urbane account:

ANN ARBOR also gave me my first taste of emancipation, and I loved it. I loved to feel that nobody was worrying about me when I came back late from the library, nobody even knew when I came. At home, if I went in the evening across the yard to the Red House, either my father or my mother would stand in the door to hear me call back that I was safe.

In the fall of 1895 Edith and I sailed on what seemed to us a great adventure. Even gaining permission to study in one of the German universities was a long and difficult enterprise, for of course women were not admitted to any of them. But if an individual professor were liberal-minded, he could give permission to attend his classes, though a degree of any kind was out of the question. Sometimes the classical faculty where Edith wished to work would be willing to accept her but the scientific faculty would refuse me, or vice versa.

We did succeed in gaining entrance to the University of Leipzig, where they told us we should be considered "invisible," and to Munich, though there the negotiations were prolonged and elaborate. The trouble lay in the classical faculty, for Munich University was Roman Catholic and the seminarians attended the courses in Greek and Latin. They might have to sit next a woman, perhaps even share a manuscript with her, if there were not enough to go round. Fortunately for Edith there was enough antagonism between the Catholics and Protestants on the faculty to make the latter espouse her cause. We heard that several compromises were suggested—one that a little "loge" be built in the lecture hall where she could sit hidden by a green curtain. Finally she was given a chair up on the platform beside the lecturer, facing the audience, so that nobody would be contaminated by contact with her. It was very trying for a girl who had not even gone through the mild ordeal of a co-educational college. Most trying of all was her experience on the opening day. One of her professors, a kindly old man, told her he would meet her at the entrance of the University Place and escort her to the classroom. She assured him it was not necessary, but was thankful indeed for his protection when she found the Place crowded with students waiting to see a woman enter.

My work in Munich was very pleasant. The atmosphere in the laboratory was quite different from that in Leipzig, it was gay and easy and friendly. Bavarians are like our Southerners in many ways. Professor Buchner was a dear. When he appeared at the door each morning with his gentle "*Gruss Gott*," we all felt a surge of affection for him. He liked to have a woman working under him and gave me a great deal of attention—but he could never forget that I was a woman. I wanted to work on a problem he was studying, the part played by the white cells of the blood in combating infection, but that would have meant animal experiments. Professor Buchner told me gently that he knew such experiments would be impossible for me. So he set me to studying a thick-capsuled bacillus from India which he hoped would turn out to be a companion and aid to the cholera bacillus, perhaps neutralizing the acid in the gastric juice which inhibits the cholera bacillus. It turned out to be nothing but a big fat nonentity.

In Leipzig there had been a fair number of foreign women students, in Munich we two and an Englishwoman, a student of archeology, were the only ones. Six German women who applied were refused. The authorities

said that the only reason women wanted to study was to prepare themselves for subversive political activity, if foreign governments wished to run that risk, all right, but the German government had too much sense. My lot in both Leipzig and Munich was easier than Edith's because I wanted laboratory work, which nobody objected to, and lectures were of secondary importance. In Leipzig two professors permitted me to attend their lectures, but in Munich all were closed to a woman. When I heard that Professor Buchner was to give an exposition of his work on immunity to a class of graduate physicians, I begged him to let me hear it. He hated to refuse me, but it was a most revolutionary request. Finally he arranged it. I must be in the laboratory ten minutes before lecture time when the oldest research student, a grandfather, would escort me to the empty classroom and seat me in a separate chair in a corner. Then, when the lecture was over, before the students left their seats, Professor Buchner would hastily escort me out. And those dangerous men from whom I was being protected were all graduated physicians, doubtless settled and staid heads of families.

However, it is not for a woman who has been on the faculty at Harvard to be too derisive about German universities in the nineties. It is still true that though women work in Harvard museums and are permitted to read in Widener Library, they are always obliged to leave at six o'clock. They are assured that this rule is for their own protection, against the undergraduates! And when the Germans did admit women, they went the whole way—no dormitories, no rules, no Dean of Women, the same freedom for women students as for men.

1865 — 1940

WILFRED T. GRENFELL

A distinct type within the medical profession is the medical missionary, and probably one of the best-known representatives of this group is Wilfred T. Grenfell, the "Labrador Doctor." Born near Chester, England, in 1865, he took up the study of medicine at the suggestion of his father. It was during this period as a medical student in London that Grenfell received his inspiration to become a missionary.

In 1892 he went out to Labrador, where he was to give medical services and spiritual consolation to the inhabitants for the next twenty-odd years. As part of his work, he instituted a system of co-operatives which proved of great benefit to the people.

In recognition of his work, Dr. Grenfell received numerous honors in Great Britain and the United States. But to the end, he remained an unassuming man whose purpose in life was to help his neighbor. He died in 1940. *A Labrador Doctor: The Autobiography of Wilfred Thomason Grenfell* was published in 1919.

NONE of our family on either side, so far as I can find out, had ever practised medicine. My own experience of doctors had been rather a chequered

one, but at my father's suggestion I gladly went up and discussed the matter with our country family doctor. He was a fine man, and we boys were very fond of him and his family, his daughter being our best girl friend near by. He had an enormous practice, in which he was eminently successful. The number of horses he kept, and the miles he covered with them, were phenomenal in my mind. He had always a kind word for every one, and never gave us boys away, though he must have known many of our pranks played in our parents' absence. The only remaining memory of that visit was that the old doctor brought down from one of his shelves a large jar, out of which he produced a pickled human brain. I was thrilled with entirely new emotions. I had never thought of man's body as a machine. That this weird, white-puckered-up mass could be the producer or transmitter of all that made man, that it controlled our physical strength and growth, and our responses to life, that it made one into "Mad G" and another into me—why, it was absolutely marvelous. It attracted me as did the gramophone, the camera, the automobile.

My father saw at once on my return that I had found my real interest, and put before me two alternative plans, one to go to Oxford, where my brother had just entered, or to join him in London and take up work in the London Hospital and University, preparatory to going in for medicine. I chose the latter at once—a decision I have never regretted. I ought to say that business as a career was not suggested. In England, especially in those days, these things were more or less hereditary. My forbears were all fighters or educators, except for an occasional statesman or banker. Probably there is some advantage in this plan.

The school had been leased for a period of seven years to a very delightful successor, it being rightly supposed that after that time my brother would wish to assume the responsibility.

Some of the subjects for the London matriculation were quite new to me, especially "English." But with the fresh incentive and new vision of responsibility I set to work with a will, and soon had mastered the ten required subjects sufficiently to pass the examination with credit. But I must say here that Professor Huxley's criticisms of English public school teaching of that period were none too stringent. I wish with all my heart that others had spoken out as bravely, for in those days that wonderful man was held up to our scorn as an atheist and iconoclast. He was, however, perfectly right. We spent years of life and heaps of money on our education, and came out knowing nothing to fit us for life, except that which we picked up incidentally.

I now followed my father to London, and found every subject except my chemistry entirely new. I was not familiar with one word of botany, zoology, physics, physiology, or comparative anatomy. About the universe which I inhabited I knew as little as I did about cuneiform writings. Except for my mathematics and a mere modicum of chemistry, I had nothing on which to base my new work, and students coming from Government free schools, or almost

anywhere, had a great advantage over men of my previous education, I did not even know how to study wisely. Again, as Huxley showed, medical education in London was so divided, there being no teaching university, that the curriculum was ridiculously inadequate.

It was in my second year, 1885, that returning from an out-patient case one night, I turned into a large tent erected in a purlieu of Shadwell, the district to which I happened to have been called. It proved to be an evangelistic meeting of the then famous Moody and Sankey. It was so new to me that when a tedious prayer-bore began with a long oration, I started to leave. Suddenly the leader, whom I learned afterwards was D. L. Moody, called out to the audience, "Let us sing a hymn while our brother finishes his prayer." His practicality interested me, and I stayed the service out. When eventually I left, it was with a determination either to make religion a real effort to do as I thought Christ would do in my place as a doctor, or frankly abandon it. That could only have one issue while I still lived with a mother like mine. For she had always been my ideal of unselfish love. So I decided to make the attempt, and later went down to hear the brothers J. E. and C. T. Studd speak at some subsidiary meeting of the Moody campaign. They were natural athletes and I felt that I could listen to them. I could not have listened to a sensuous-looking man, a man who was not a master of his own body. Never shall I forget at the meeting of the Studd brothers, the audience being asked to stand up if they intended to try and follow Christ. It appeared a very sensible question to me, but I was amazed how hard I found it to stand up. At last one boy, out of a hundred or more in sailor rig, from an industrial or reformatory ship on the Thames suddenly rose. It seemed to me such a wonderfully courageous act—for I knew perfectly what it would mean to him—that I immediately found myself on my feet, and went out feeling that I had crossed the Rubicon, and must do something to prove it.

1871 — 1945

WALTER B. CANNON

Walter Cannon, one of the outstanding physiologists of our day, was born in 1871 in Prairie du Chien, Crawford County, Wisconsin, the very county immortalized by the experiments of William Beaumont, the pioneer American physiologist (see below). His early education was acquired in Milwaukee and St. Paul, but for collegiate and graduate training Cannon turned eastward to Harvard. In 1900 he received the M.D. degree, and accepted an instructorship in physiology at the Harvard Medical School. Six years later (1906), Cannon succeeded Henry P. Bowditch as professor of physiology, a position which he held to 1942.

In 1942, after his retirement, he gave a series of lectures at the New York University College of Medicine, which were later expanded into the book called *The Way of an Investigator*, from which the following selection is taken. This

book, not unjustifiably, has been compared to Claude Bernard's *Introduction to the Study of Experimental Medicine* (1865). Yet Cannon's scope is immeasurably broader, for he includes within his view the social functions and duties of the scientist. This one would expect from a man who for more than two years served as chairman of the Medical Bureau to Aid Spanish Democracy, who became president of the American-Soviet Medical Society, and who even before the United States became involved in World War II participated in the work of the American Bureau for Medical Aid to China and the United China Relief.

In addition, Walter Cannon felt strongly the desirability of explaining scientific discoveries to a more general public. One of the works which he wrote in consequence, *The Wisdom of the Body* (1936), went through a number of editions and was translated into many languages. His scientific work was concerned primarily with digestion, bodily effects of emotional excitement, wound shock, stable states of the body fluids, and chemical mediation of nerve impulses.

The modest account of his life and work which Cannon left is an excellent picture of the scientific way of life.

I ATTENDED public primary and grammar schools in Milwaukee and St. Paul. In 1888, I entered the St. Paul High School and in three years completed the four-year course. I was older than most of my classmates because my father, convinced that I was not paying proper attention to studies in the grammar school when I was fourteen, had put me at work in a railroad office. There I remained for about two years. The chief value of that experience was a heightened appreciation of the value of free time—even three hours away from work seemed to offer marvelous opportunities. Probably that appreciation had its effect in speeding up my attack on the high-school curriculum. In addition to the routine studies on the high-school course I was for a year editor of the paper, *The High-School World*. At that time Ignatius Donnelly, a local politician and a writer with fantastic imagination, brought out his *Great Cryptogram* designed to prove that Bacon wrote Shakespeare's plays. By use of methods similar to Donnelly's, I found in my Latin Virgil and published in the *World*, pompous pronouncements, one of which was, "Alas, alas, fame is no fun!"

As a boy and as a youth I took pleasure in vigorous sports—skating, bobsledding, and playing hockey during the winter, and at other times snap-the-whip, pull-away, football, baseball, and tennis. Camping near Minnesota lakes with boyhood friends was another source of outdoor fun, in the camping parties I usually served as cook.

Although my father had had little formal education himself, he desired that his children should enjoy the advantages he had missed. He surrounded us with a good library and provided us with serious magazines, hoping we would profit from them.

During my high-school days Huxley was carrying on his controversy with the Bishop of Peterborough and with Gladstone. These debates I followed with keenest interest, for they disrupted the very strict Calvinistic

ideas that had been elaborated in members of the family from early childhood, at church, and in Sunday school. An interest in the foundations of Christian doctrine was at once aroused. I was stimulated to read further and intensively books by John L. Spalding, James Martineau, John Fiske, James Freeman Clarke, and others. Finally my inner turmoil drove me to the confession that I no longer held the views accepted by members of the Congregational church which I had joined. The clergyman in the church, to whom I was sent for counsel, took precisely the wrong course in dealing with my difficulties, he wanted to know what right I had, as a mere youth, to set up my opinion against the opinion of great scholars who supported the church's doctrines. This appeal to authority did not impress me at all, because I knew that there were great scholars in the opposition. Furthermore, I had the feeling that I was entitled to my independent judgment. If I had not been deeply affected by the experience I should simply have shown indifference, and slowly slipped away from my difficulties. Instead, the decision was a source of much distress. Furthermore, my withdrawal from the church resulted in painful friction with my father, who felt that my defection was evidence of his failure to guide and influence me properly. I am pleased to testify that later he was reconciled to my action and took a liberal attitude toward persons who had intellectual differences with him.

The reading of Huxley's controversial articles aroused in me an interest in his essays and also in the writings of Tyndall, Lewes, Clifford, and others whose papers and books on scientific topics were being publicized at the time. This serious reading strongly influenced me in coming to the decision to try to obtain a college education. A graduate of Harvard College, with whom I had become acquainted by chance, attractively presented the advantages offered by his alma mater. There was little money in the family to pay for a college experience in the East, and the University of Minnesota was temptingly near.

My hopes were turned eastward, however, by the suggestions of a woman, Miss M. J. Newson, who had a deep influence on me in my youth. She was an extraordinarily stimulating teacher of English literature in the St. Paul High School. Pupils left her class exercises not only appreciative of niceties of thought and expression, but also stirred to think and discuss. "Is it true that 'Whatever is, is right,' and 'All's well with the world'?" she would ask, and we were off in debate. Her constant sympathy I had received in abundance during my period of intellectual stress. And when I told her about the advice of the Harvard alumnus she urged me strongly to attempt the venture he had suggested. In part through her good offices I succeeded in securing a freshman scholarship, that together with a small amount of money, about \$180 contributed by my father, gave me a start at Harvard. Thereafter, throughout four years of college and four years of medical courses, with the aid of such scholarships as were awarded to me, I earned my way by outside work.

On coming to Harvard College I was suddenly plunged into the new experience of listening to lectures and being required to take notes. At the first lecture I attended, I happened to sit beside a rather badly battered and very ponderous member of the football team. In my ignorance I turned to him for advice, asking him what to put down in my notebook. He growled back *sotto voce*, "Wait till he says something loud. Put that down." It was not long before I learned that, in spite of such expert testimony, there was a great difference between sound and sense.

In the College during the nineties students were allowed to take as many courses as they might wish to carry. In my four years of college life I completed twenty-two courses, and was graduated *summa cum laude* in 1896. Two of the twenty-two courses were of research quality, because of these and also because of graduate courses completed in addition to those required for the A.B. degree, I was granted in 1897, at the end of my first year in the Medical School the degree of Master of Arts.

The extra courses I took during the four years in college and the outside work in which I engaged in order to meet expenses naturally pressed hard upon available time. There was little opportunity for the amenities of college life. A valuable result of the pressure on time, however, was the discipline it demanded in ways of working. I had to learn to concentrate on the essentials of the task in hand and to finish it rapidly and accurately. This discipline I have regarded as of inestimable value in many later requirements as head of a department and as a leader of research activities.

During my high-school and collegiate studies I was especially interested in the biological sciences. Mathematics was intriguing in its elementary aspects, i.e. through algebra and trigonometry. Unfortunately I did not continue in a study of analytical geometry and calculus. Physics I found not difficult. Descriptive chemistry and analytical chemistry proved attractive, and if I had known the career I was to follow I should have chosen further training in chemical technique. Modern foreign languages were cultivated for practical purposes. Both in high school and in college I derived much intellectual stimulation from independent reading—e.g. Francis Galton's *Inquiries into Human Faculty*—in addition to the routine courses.

My student years in Harvard College were for me exciting. New ideas were constantly flowering because of contact with stimulating teachers and access to stimulating books and also because of companionship with intellectually eager fellow students, some of whom were in the Graduate School. Among my most influential teachers were Charles B. Davenport, George H. Parker, and William James. With Dr. Davenport I completed my first investigation of a biological phenomenon, the orientation of minute swimming organisms to a source of light. Thus I caught a glimpse of the attractions of scientific research. Dr. Parker, with whom I served as a student assistant for two years shortly after his return from Germany in the early nineties, became later one of my closest friends. His limitless enthusiasm, his beautiful clarity

in expounding a subject, and his warm sympathy and understanding of student difficulties and of the earnest aspect of student aims made him an exemplar of admirable qualities which influenced many who had the privilege of coming in contact with him. William James was fascinating in the freshness and constant unexpectedness of his ideas and his phrasing of them. In my eagerness to take much of knowledge as my province I was attracted at one time toward philosophy. I recall walking home with Professor James after one of his lectures and at the end of our talk confessing my inclination toward philosophical studies. He turned on me seriously and remarked, "Don't do it. You will be filling your belly with east wind." The remark probably sprang from his quick recognition of my lack of fitness rather than from his disdain for philosophy. Whatever the reason for his advice, I followed it.

At the beginning of the last of my four years at the Harvard Medical School I was invited to conduct at Harvard College and at Radcliffe College the course in comparative anatomy of vertebrates, in which I had been student assistant while an undergraduate. At the end of the year, in June, 1900, when I received the M.D. degree, offers came to me of a continuing instructorship in zoology in Cambridge and an instructorship in physiology at the Medical School in Boston. I decided to accept the latter. For two years (1900 until 1902) I had the title of instructor, for four years thereafter (1902-1906) I was assistant professor, and in 1906 I was appointed successor to Henry P. Bowditch, as George Higginson Professor of Physiology, an appointment which continued until my resignation in August, 1942. The thirty-five years during which Dr. Bowditch held the chair of physiology in the Medical School and the thirty-six years during which I held it covered the entire period of the development of physiology as an actively pursued medical science in the United States. Before 1871 it was a subject presented to the students in textbooks and in lectures commonly given by professors of medicine under the title "institutes of medicine."

A year after graduating from the Medical School I was married to Cornelia James. We had known each other as students in the St. Paul High School, and our friendship grew in intimacy while she was an undergraduate at Radcliffe and I was studying at the Harvard Medical School. When our wedding was announced in the department of physiology one of the staff at that time quoted regretfully, "A young man married is a young man marred." This is a cynical dictum I cannot confirm. Throughout our married life my wife has been my best, my most helpful and most devoted counselor and companion.

When I was a boy my father had expressed a wish that I might become a doctor. Somewhat vaguely I had that intent when I entered Harvard College. It was not until I had passed about halfway through the college period and had studied chemistry and biology to a considerable degree that the resolution became definitely formulated. At that time I was attracted by the possibility of devoting my life to neurology and psychiatry. With this aim I

undertook work on the structure of the brain and in psychology While in the Medical School I paid special attention to courses concerned with diseases of the nervous system It is probable that if, while a first-year student of medicine, I had not undertaken research on the physiology of the digestive tract by use of the then newly discovered X-rays, I would have become a neurologist

My father's wish that I might become a physician was therefore never realized Instead of engaging in practice I engaged in teaching medical students This was what my predecessor, Dr Bowditch, had done He told the tale of a conversation between one of his children and a little companion The companion asked, "Has your father many patients?" and the answer was, "He has no patients" "What! A doctor and no patients?" Thereupon the apologetic answer, "Oh, no, he is one of those doctors who don't know anything!" Possibly the children of other physiologists suffer from the same sense of inferiority One of my daughters, on being informed proudly by a little friend that *her* father was a doctor, remarked somewhat sadly, "My father is only a father!"

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HENRY E SIGERIST

In 1939, the degree of Doctor of Literature *honoris causa* was conferred by the University of the Witwatersrand (South Africa) on Henry E Sigerist, outstanding American medical historian On this occasion, Dr Sigerist delivered an address entitled "University Education," of which the first part is an autobiography that might well be called the "Education of Henry Sigerist"

Born in France and educated in Switzerland, England and Germany, he prepared himself for his chosen field, the history of medicine, by acquiring a thorough grounding in languages, science, history and medicine During World War I, Sigerist served for two years in the Swiss Army When the war ended he turned to research in medical history under the great German medical historian Karl Sudhoff In 1925 Sigerist became his successor in the chair of medical history at Leipzig It was in 1927 that he first came in touch with William H Welch, who was organizing the Institute of the History of Medicine at the Johns Hopkins University In 1931 Sigerist came to America as visiting lecturer to the Johns Hopkins University While in the United States, he was offered and he accepted the chair at the Hopkins Institute His achievements since then are too well known to require elaboration There can be little doubt that the increased interest in medical history in America at present is in large measure due to his influence

His warmly humanistic approach, contagious enthusiasm, and broad interests have brought him a wide audience At the same time, Sigerist is not content simply to collect and describe the facts of a dead medical past Medicine for him has a living past which points to lines of action in the present It is because of this approach that he has been called upon by the governments of South Africa, India, and Saskatchewan (Canada) to aid in the preparation of health programs

HAVE to go far back to recall the figure of the first teacher who had a profound influence on the formation of my mind. When, in 1901, my family moved from Paris to Zurich, in Switzerland, I was ten years old, and since I had a very imperfect knowledge of German I was sent not to a public but to a private school. It was owned and directed by an educator of genius, *Fritz von Beust*. Son of a German revolutionary who after 1848 had sought asylum in Zurich and opened a progressive school, he followed in the footsteps of his father. A strong man with a pink face and white beard, he was a convinced socialist and atheist and was first of all an enthusiastic scientist. Science played a dominating part in the curriculum. The rotation of the earth was demonstrated to the children by having them build a sundial in the garden and watching it through the seasons. We learned geometry by making cubes, cones and other bodies. In geography we pasted maps on cardboard, dissected the various altitude layers with the jig saw and mounted them so as to construct relief maps of the country. And every few weeks we made whole-day excursions into the beautiful surroundings of Zurich. The geography of the region was discussed but the chief purpose was to collect plants. Each one of us had a herbarium, and at the age of twelve we had learned to analyze the structure of plants and were able to diagnose the family of every one of them. A most liberal spirit pervaded the school. Teachers and students were carried away by von Beust's personality whose mere presence was sufficient to insure discipline. He opened up for me the realm of nature and awakened in me as in so many others a deep interest in science. It was only much later that I realized how much the three years spent in that school had influenced my whole outlook. After von Beust's death the school was continued for a few years by his co-workers but the driving spirit was gone and the school closed down. It could afford to do so because in the meantime the public schools had adopted most of its principles.

During my Gymnasium days I became interested in the East and since the language is the key to the understanding of every civilization I began learning Arabic. For a number of years I spent an early hour on the study of Arabic every morning before going to school. I then took the Hebrew courses that were offered at the Gymnasium to those students who intended to study theology. After graduation I registered in the Philosophical Faculty of the University of Zurich as a student of oriental philology. I continued my studies of Arabic and Hebrew and took up Sanskrit. And since the latter course proceeded rather slowly I worked with a private tutor and at the end of the year we were reading the *Panchatantra* and similar texts.

In those days the University of Zurich was rather weak in oriental studies and this determined me to spend most of the year 1911 in London. I had some excellent courses at University College, and since I was the only student attending them learned a great deal. With Mabel Bode I read the *Meghaduta* and with H. Hirschfeld the *Fakhri* and the *Delectus Veterum Carminum*.

Arabicorum of Noeldeke At the same time I began the study of Chinese at King's College and devoted a great deal of time to it My teachers were rather skeptical and repeatedly pointed out to me that it was impossible to embrace the whole Orient, that I would have to specialize either on the Near East, on India, or on the Far East But I refused to specialize I was interested in the East as a whole, in comparative religion and comparative literature, in the migration and transmission of literary subjects and similar problems And since I was very young I thought that nothing would be impossible to me

I worked very hard in those years and always had some grammar in my pocket and a notebook full of Chinese ideograms But the time came when I had to admit that my teachers were right It could not be done The task became so big that quite physically I could not master it But I still refused to specialize and since I had always been greatly interested in science I went back to the University of Zurich and took the science courses that were given to students of science as well as to medical students

I was an enthusiastic medical student, but I obviously remained interested in the humanities In Zurich, medical school and university were on the same campus so that it was possible for medical students to attend courses in the academic division, which I frequently did In Munich, once in the middle of the academic year I suddenly felt tired of the hospital and of medicine at large I began skipping classes and spent the days in museums and art galleries, the nights in theatres and concert halls I was in a turmoil and when quite accidentally I met a friend in the street who was leaving the same day for Venice I decided to join him, and spent several weeks in Italy For a while medicine was entirely forgotten, and I lived in a world of history and art Then, one evening, sitting in a café of the Piazza San Marco I felt an irresistible longing for the hospital, and there for the first time it occurred to me that medical history and the history of science might be a field in which I could combine all my interests I went back to Munich the same night in a state of great elation The next morning I resumed my hospital work with enthusiasm In the afternoon I went to the Library where I found *Isis*, the journal recently launched by George Sarton, and the various publications of Karl Sudhoff In the next few days I made a plan to study the various periods of the history of medicine and science by reading the most important texts A German publisher was issuing a series of historical source-books that included the history of science and I soon was collecting materials for a history of oxidation But then the war broke out We were all called for practical work and the book was never finished

I knew what I wanted and felt no hesitation about it My field of research was to be medical history To most of my former professors I was a lost sheep "Medical history," they said, "is a delightful hobby for retired practitioners but there is no career in it" I was no longer a child and knew better And

this time I was right. In all my previous studies I had felt the need for a historical approach to any given problem. I saw that general history must by necessity remain fragmentary and lead to wrong interpretations if it does not include the history of science. And I felt, although rather vaguely at the time, that medical history studied in a broader sense could be developed into a method that could contribute to the solution of urgent social problems of medicine. In medical history I found a field that was not a narrow specialty and in which I could combine my various interests. I was fully aware that I was not yet equipped for such studies and that I would have to go back to school for at least three years. And since I could no longer afford to make a wrong start I went to Leipzig, in 1919 as soon as conditions permitted in order to consult and work with *Karl Sudhoff*.

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WILHELM HIS

Wilhelm His, Swiss anatomist and embryologist, was born at Basel, and later became professor of anatomy there. From Basel he was called to Leipzig where he worked until his death. He made contributions of the greatest importance to our knowledge of embryology and physical anthropology. In 1865 His introduced a new classification of tissues for embryological study. Later (1880-1885), he presented the first study of the human embryo as a whole. His made wide use of three-dimensional models and serial sections for teaching. In the field of physical anthropology, his ability is illustrated by the anecdote that in 1895 he identified the remains of Johann Sebastian Bach by means of comparative measurements.

His greatly stimulated American embryology through one of his students, Franklin P. Mall, professor of anatomy at the Johns Hopkins Medical School. (Among the students of Mall were many of America's leading anatomists, as well as the widely known writer, Gertrude Stein.) The details of His's career and scientific work may be read in his *Lebenserinnerungen* (Reminiscences), which appeared at Leipzig in 1903.

SINCE then I have often harked back with yearning to that time of absolute freedom for work. To be sure it also presented the danger of losing one's sense of direction. Thus, I once spent eight days in putting together a table for glass-blowing, but after completing it I suffered an attack of low spirits because of the time that I had so senselessly wasted. In later years, however, it has been my fundamental experience that for the progress and success of one's own intellectual labors it is more advantageous to be burdened with a moderate number of obligations than to possess absolute freedom. In particular I have often found that at the beginning of a desired vacation, simultaneously with the appearance of the ability to dispose freely of one's time there is also a relaxation of intellectual tension which can only be overcome

gradually and by compulsion. The most dangerous aspect of this development is the desire to wait for a favorable mood in which to start working. Such truly fruitful moods can sometimes occur quite unexpectedly, more frequently, however, they can be achieved only after one has violently fought his way through barren and apparently unfruitful beginnings. But once the goal has been clearly perceived, one soon learns to utilize as fully as possible even the smallest periods of time that occur in the course of the day's work.

IV

THE PRACTICE OF MEDICINE

The true physician is one who cures, observation which does not teach to cure is not observation by a physician, but rather by a naturalist

F J V Broussais

THEOPHRASTUS BOMBAST VON HOHENHEIM, called Paracelsus

Somewhat over four hundred years ago, in 1541, there died in Salzburg one of the most forceful and interesting personalities of the Renaissance—Theophrastus Bombast von Hohenheim, who later assumed the name Paracelsus, by which he is generally known. He was born near Einsiedeln, Switzerland, late in 1493, as the son of Wilhelm von Hohenheim, a physician and the illegitimate scion of a Suabian noble. Paracelsus grew up in the mountains of Switzerland, until 1502, when his family moved to Carinthia (Austria), where his father had accepted a position as municipal physician of the mining town of Villach.

Following in his father's footsteps, Paracelsus studied medicine, at the University of Ferrara. Disappointed by the instruction which he received, he set out on a voyage of enlightenment and discovery which led him all over Europe. During these wanderings, he practiced medicine, was a military surgeon, visited mines and workshops, studied local diseases, and was eager to learn from any source, no matter how humble. Eventually he developed his own ideas of medicine, as well as a philosophy and theology of his own. In his therapy, Paracelsus applied many new drugs, particularly chemical compounds. In the course of his career, he wrote a great many books, on a wide range of subjects, but owing to a conspiracy of silence directed against him only few of these were published during his lifetime.

Several times Paracelsus attempted to settle down, but circumstances always forced him to move on. In 1527 he was appointed to the post of municipal physician in Basel, which carried with it the privilege of teaching at the University. Here he was active from 1527 to 1528, but within the year he made many enemies and was compelled to leave. In 1538, ten years after leaving Basel, Paracelsus again settled down for a few years in Carinthia. Here he wrote his book, the *Seven Defences*, in which he defends his practice against his calumniators. This is probably his most personal work, and gives a splendid view of this medical revolution. (From this book we have taken the following selection.) In 1541, at the age of forty-eight, Paracelsus came to Salzburg, sick and worn. And here he died and was buried.

THE SIXTH DEFENCE

To excuse his Strange Manner and Wrathful Ways

NOT enough to attack me in various articles, but I am said to be a strange fellow with an uncivil answer, I do not wash up to the satisfaction of everyone, I do not answer everyone's contention in humility. This they consider and deem a great vice in me. I myself, however, deem it a great virtue and would not that it were otherwise than it is. I like my ways well enough. In order, however, that I may justify myself as to how my strange manner is to be understood, pay heed. I am by nature not subtly spun, neither is it usual in my country to attain anything by spinning silk. Neither are we raised on

figs, nor on meat, nor on wheaten bread, but on cheese, milk and oatcakes. Thus cannot make subtle fellows, besides what one received in youth sticks to one all one's days. The same is almost coarse to the subtle, the cat-clean, the superfine. For those who are brought up in soft raiment and in the women's apartments, and we who grow up among fir-cones do not understand one another well. Therefore must the coarse be judged coarse, though the same think himself utterly subtle and charming. Thus it is with me too: what I think is silk, the others call ticking and coarse cloth.

But pay heed further how I justify myself in this accusation that I give a rough answer. The other physicians know little of the arts, they resort to friendly, pleasing, charming words, they advise people with breeding and fine words, they set forth all things at length, delightfully, with distinct differentiations, and say: Come again soon, my dear sir, my dear wife, go and accompany the gentleman, etc. I say thus: What wilt thou? I have no time now, it is not so urgent. Now I have upset the applegart! They have made such fools of the patients that they are completely of the belief that a friendly, affectionate manner, ceremony, ingratiating ways, much ado, constitute art and medicine. They call him "young sir" who only comes from the shopkeeper's, they call another "Sir, wise Sir," who is a cobbler and a dullard, where I say "Thou", but with this I throw away my resources. My intention is to gain nothing with my tongue, but only with works. As they, however, are not of this opinion, they can well say in their way that I am a strange, queer-headed fellow, that I give little good advice. I do not believe in feeding myself on friendly caresses, wherefore I cannot use what befits me not, nor what I have not learned. For it is not necessary to use such flattery and to deal tenderly with every boor who is not fit to be carried in a dung-barrow. Medicine should be such that the physician may answer according to his flesh and blood, his country's customs and his own nature, rough, rude, stern, gentle, mild, virtuous, friendly, delightful—according to how he is by nature and by acquired habit. But let this not be his art, but only the briefest answer. And on with the works! That's the way to oil the wheels!

Thus I consider in this respect I am sufficiently defended. Still, it happens that I have other strange ways, for instance towards the sick, if they do not follow my prearranged injunctions. Anyone can judge that such strange ways are not unjustified, in order that medicine may be found true, the patient become well, and I may still remain without blame. A turtle-dove would grow angry with such lousy muddle-heads.

THE SEVENTH DEFENCE

*How I Too Know Not All, Cannot And Am Not Able
To Do What Each One Needs, Or Might Need*

This I must confess, and I am not able to grant and fulfil everyone's desire, as he certainly and undoubtedly would have it from me, this I cannot do, nor

is it in my power For God did not create medicine thus according to their will, that it might act immediately according to the will of all comers If then God will not grant nor give such people anything, how can I help it? For I cannot master nor overpower God, but He me and all others Thus are all answered alike if they were agreeable to God or pleasing to him for healing, he would not have withdrawn nature from them It is the same thing as one who thinks himself a fine, handsome fellow and wants to stand out before all others and wants all women and maidens to favour him But he was born crooked, has a hump on his back like a lute and in other respects too he has no comeliness of body How can women favour one whose own nature does not favour him, but spoiled him in his mother's womb and made nothing good of him? In order, however, that I may instruct you the better, know ye that if God bestow no good on a man, how then should nature bestow good on him? Where both favours are absent, of what good is the physician? And who can blame him? Now they say when I come to a patient, I know not immediately what ails him, but I need time to find it out It is true That they judge immediately is the fault of their foolishness, for in the end the first judgment is false and from day to day they know the longer, the less, what it is, and make liars of themselves Whereas I desire to approach from day to day, the longer, the closer to the truth For with hidden diseases it is not as with the recognising of colours in colours one sees well what is black, green, blue, etc But if there were a curtain before it, thou also would not know To see through a curtain requires effort where there has been none before What the eyes see can well be judged hurriedly, but what is hidden from the eyes it is in vain to conceive as though it were visible

Why do you throw it in my face if I cannot cure impossible things when you cannot cure the possible? But rather you ruin it, so that I must build it up again How can I cure a cut-off heart, put a cut-off hand back on? Who has ever been able by the light of nature to join death and life and unite them so that death should receive life? Indeed, it is not natural but divine How should I do such things, when you cannot heal wounds in which there is no death, except what you invite? You are longsighted, you see into the distance, but not yourself near by I will prove it with your conscience, that it teaches and instructs you, that you do and act against it, and would glorify yourselves with that which brings you to shame For you have medicine from God, with which to drive out all things possible, you could do it, and are incapable Why then do you accuse me of doing nothing for impossible diseases and that for them no medicine is given me, nor created?

With this I desire to have defended and protected myself for the last time until further provocation, which, if God will, will also be returned blow for blow

And herewith too I desire only to beg that the pious and just of true conscience should not bother themselves with my writings For necessity re-

quired that I answer For Christ too replied and was not silent For everyone should know that answering is just and fitting, in order that those do not stagnate completely nor blind themselves with idle talk, who live on and enjoy idle talk If they were not answered, they would win the argument and would consider themselves right, and there would afterwards be even more error, rubbish, disaster and corruption Wherefore is answering equivalent to anticipation of present and future corruption and a revelation of what the ranters are For such reasons as these then I have been pleased to answer and to protect myself from all those whose hearts are full of ill will, that both sides may stand revealed For it is necessary that vices come, but woe unto him through whom they come! That is to say, that liars speak contrary to the truth, but woe unto them, for truth reveals the lies If they were silent concerning their vices, truth too would be silent But since it is necessary, lies and vice cannot, and may not, be silent, it must be uttered, but woe unto them Thou, reader, however, shouldst consider and measure all things most justly, that thy reading may bear the fruit, profit and good

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JOHANN DIETZ

Master Johann Dietz was a barber-surgeon, and as such his professional life was divided into three periods his apprenticeship, his years as a wandering journeyman, and finally his full membership as master of his guild In his day, the aspiring surgeon learned his trade by being apprenticed to a master, who owned a shop Later he became a journeyman, also employed by a master barber-surgeon, and in many cases the wandering journeyman became an army surgeon We see Dietz functioning in this capacity, and then we observe how he set himself up in business

MEANWHILE it happened that Lieutenant-General Demini came to Utersen, in order to pay a visit to Privy Councillor Buchwald, or rather his wife, since the Privy Councillor was an old man and away from home, and she was a fine handsome woman But when the Councillor returned home unexpectedly and found this distinguished guest, they were both somewhat startled Nevertheless, he was obliged to do his guest all honour, with costly wines, and to entertain him

Now, when the General sought to take his leave—and the wine and good cheer may well have confused him—and he was endeavouring to make his compliments with the due scraping and bowing, outside the door of the house, where there was a high step without any handrail (as is usual, even in the largest and finest houses), he fell over backwards, receiving an extensive wound in the head The blow produced the immediate effect, that he became speechless, and without understanding, and was carried back into the house

Then was a hue and cry for the regimental surgeon! I was sent for straightway, and on every side it was dinned into my ears that I must save him

In the first place I opened a vein in the right arm and let the blood flow freely After this I shaved his head and bandaged his wound, and then they had to bring me living hens, in which I made a long incision and then tore them clean in two, and these I laid, with blood and all, on his head, and thus I did so often as the hens grew cold I also gave him several doses of *spiritum salis ammoniaci anisatum* and *pulverem antispasmodicum* Finally, I made frequent applications of poultices of cabbage boiled in wine

Then the patient began to speak indistinctly and to wave his arms about, and took me by the hand, saying privately to the Colonel "Oh, surgeon, good man, he not leave me!" (For he was a Frenchman) And as he was a very rich man with many dependents, they thought it advisable that *Doctores* should be sent for, and they were immediately brought from Hamburg in a coach and four

The physicians asked me all sorts of particulars, and what I had done for him I told them, and they approved and gave me medicaments of their own which were to be administered hourly They soon excused themselves, on account of their patients they could not remain long away from Hamburg

It was then decided to take the General to Hamburg in a great coach with a bed, with me beside him, while two *Doctores* accompanied us in another coach and the servants and lackeys travelled by post I sought to excuse myself on account of my duties, but to no avail The regiment must be attended to by other surgeons None the less, my pay should be continued I yielded, only giving orders that my two horses should be well looked after

In Hamburg we lodged with a contractor And there again I was 'thoroughly comfortable For I dined at the General's table and at night slept on a folding bed in the General's own room, so that I might be with him in case he required assistance, to rub and anoint his limbs, so that in a little more than three months' time he was completely restored

In the meanwhile my father came to Berlin to see me, and to discuss the possibilities (since at Court there was so much to be earned and so much practice to be obtained)—of obtaining for me, in Halle, a free Court barber's saloon He had indeed taken some steps in that direction, in the great deal of business of the kind with the help of Privy Councillor Fuchs I let him do as he wished, and he had an application prepared by Master Katsch, who at that time was still a poor advocate, though subsequently he became one of the most distinguished Privy Councillors Thereupon we set out to call on Privy Councillor Fuchs

But he, directly he heard our errand, set about us in the most violent fashion "What, what!" he said, "the people of Halle have a privileged corporation! One cannot take things away from them to give them to others! You are a young man and can very well look for something else"—Remon-

strance was useless We had perforce to go away again like a cat from a dovecot This was quite just Would to God matters had been left thus — However, we were despondent and my father returned home

It may have been the Privy Councillor, or another, who recommended me to his Highness the Grand Master in Sonnenburg, the brother of our King It is enough that Master Schmieling, who was his groom of the chamber and very anxious to leave, sent for me and explained the terms offered, so, as I did not care to refuse, I travelled in his company

And so I came to a second Court I waited upon the Prince, I made him my most dutiful compliments, and so far all went well I received daily attendance, food and drink, and everything in abundance Midday dinner we took about three or four o'clock, at night we supped about twelve or one, of an evening, for sheer weariness, we used to lie among the Prince's wolf-skins, or elsewhere, wherever we could, like so many pigs And in the mornings, we arose again without saying our prayers, and then repaired to the kitchen and the cellar On occasion, too, we went hunting, and so it was day after day

Now, as the Margrave was not willing to part with Schmieling, a second groom of the chambers, or I myself, would have been no use to him (and what is more I did not wish to accompany him to Italy), he most graciously proposed that I should accept the freedom of one of his cities on the further side of Kustrin, and live where I pleased — But I bethought me and asked him only for his gracious recommendation to His Grand Ducal Highness, to grant me the privilege of opening a Court barber's saloon in Halle — This was done, and thereupon I rode back to Berlin

I myself prepared a petition, as well as I could, for I was no longer willing to place my trust in any solicitor, for they had docked both me and my father of many guilders and ducats in return for which they had given us so much wind And so in this place I warn all men against them

It seemed to me that my petition was fairly well drafted I waited upon Privy Councillor Eberhard von Danckelmann, since he had come from Court, and must have encountered there a certain amount of hostility, as often happens to such gentry To him I handed the petition as he was getting out of his coach, and I had to wait until he spoke to me, for such is the custom So, the result of this blunder was that I received my *decem*, for he turned upon me furiously and thrust me back, so that I was impatient to draw up the petition again, and returned home in a state of despondency

I complained of this to my old familiar friend, Master Pechtolt He consoled me and told me that I was not the only sufferer, so that nothing had been lost, the tree did not fall at the first stroke, yet he wished to give me the advice that in this case I should mark time and wait upon events and look into the matter of three business connections of his mother-in-law's for the

sake of what she might pay me, in the meantime my path would become plainer This, as it afterwards proved, was good advice

By performing this service I was able to seize various opportunities of different kinds, and to obtain some distinguished patients, who recommended me to others In particular there was Master von Canitz, who was suffering from a serious disorder of the eyes, Commander Hacke, with a bad foot, and more besides, whom I cured, and all of whom attested the same under their hand and seal Master Councillor Horch was willing to pay me in hard cash, on account of his father, of whom I often had to write to him while he was in Switzerland, *item*, Privy Councillor Krug, who was still with Master Danckelmann, and had even decided upon the time when I should present my petition, because they were then available

Fully nine months had gone by, when this came to pass I gave the servant a guilder, and informed him that I had no further need of his services When the Privy Councillor began to read the petition he burst out laughing, somewhat over-loudly The other two did not question him, but Master Danckelmann of his own accord informed them "This fellow is an army surgeon in this district, making application for a Court barber's place in Halle, and has drawn up the petition himself "

They both stated that they knew me well, I had recently had plenty of experience, and the barbers of Halle had refused to let me buy a barber's shop, but had driven me away — "What!" said the Councillor, "Driven him away? Tell him that he must appear tomorrow morning at nine o'clock before the Electoral Chamber " How zealously I prayed that night, and how thankful I was when on the approach of nine I found myself with many others before the Electoral Chamber!

His Most Blessed Majesty came out with Master Dankelmann, informing each of those present of his decision, and to me he said "You shall have what you are asking for " His Majesty having considered my case, I made him my most respectful obeisance

A few days later I made an inquiry again in the Chancellery of Investitures, but my business was not yet completed After some days I called again My patent was then ready, and was indeed even finer than I myself could possibly have asked It set forth that I received permission to conduct the business of a barber in Halle with all rights and privileges accorded to other and previous barbers, including those of teaching apprentices, and claimed the right to employ journeymen — For this patent I had to pay thirteen thalers, and I had also to pay one thaler and fifteen groschen to a Councillor for Counsel's opinion, to the effect that all was correctly stated, in order to protect myself, and that I might, on my own application, undergo examination at the Council House, *in pleno*, at the hands of the barbers and two *Doctores*

Whereupon I took my leave and set out for Halle on Christmas Eve Just as I was about to turn into the street where my father lived some men ap-

proached me carrying a corpse When I questioned them, I learned that the body was that of the barber, Master Watzlau I little thought that his widow would one day be my wife

I went to my father's house, and at first all were cheerful However, they had soon had enough of me, so that I rented in the Sow Market a bedroom and sitting-room, for thirty-two thalers yearly, so high were house rents in Halle

Meanwhile I lodged for a few weeks with my father, and diligently solicited the Council to undertake my examination The Council sent for the barbers fully three or four times over, but they did not appear This was a great *faute* on their part It would have been better had they had me examined in their presence and had asked me questions to which I could hardly have replied For it is quite possible for one man to ask more questions than ten can ever answer However, matters were so ordered that my examination was held in *contumaciam*, and the learned *Doctores* gave me the most excellent *attesta* of examination The whole Council was present, and all of them were curious to hear both the barbers' side of the affair and my own Many a one must have held his nose before he had done with my affairs! Nevertheless, I came away satisfied, and straightway hung out my basin

And as used to be the case in those days, I, as something new, was greatly in resort, and found myself obliged to accept both journeymen and apprentices This was in the year 1694

The Corporation of Barbers received the strictest orders in this case, the infringement of which would result in the complete cancellation of all their privileges, should they molest me or fail to accept me Whereupon they invited me to become a member of their guild, and appointed my hours of practice

1745 — 1813

BENJAMIN RUSH

The problem of how to acquire a practice is one that confronts every young doctor In the words of Forbes Winslow "the discovery of the philosopher's stone, or the quadrature of the circle, sinks into utter insignificance when placed in comparison with the art of rising in physic" The solution of this problem by Benjamin Rush was in the tradition of his predecessors and contemporaries His account is reminiscent of the story told of Dr Mead, who was the son of a dissenting minister Whenever he was called out of his father's church, which was not infrequently the case, the preacher would stop in the middle of his discourse, and say "Dear brethren, let me offer up a prayer for the safe recovery of the poor patient to whom my son is gone to administer relief" It is not told how much this circumstance enhanced the name of the eminent doctor, but we have little doubt that it brought him many a patient

In his practice, Rush was actually one of the last leaders of a medicine that had

not yet completely freed itself of the medieval tradition. He set up a logical system of medicine from which derived the therapy that he employed. But it was a system uncontrolled by experiment, so that three decades later, an outstanding American physician of the next generation could refer to it as "utter nonsense and unqualified absurdity." Nevertheless, much may be forgiven Benjamin Rush. Who in his position faced by the appalling yellow fever epidemic of 1793, would have acted differently? Where medical science did not yet exist, medical practice could hardly afford to wait. Indeed, this is one of the great dilemmas that has always confronted the medical practitioner. In such a situation, where knowledge is not available, the doctor grasps at any hint and tries to work it up so that it will become applicable for treatment.

IN THE course of a week I settled in a house which had been previously taken for me in Arch Street, between Front and Second Streets. My brother who had just begun the practice of the law, lived with me. A sister who had been unfortunate in her marriage, kept house for us. In this situation I was led to deliberate on the usual modes of a physician's getting an establishment in business, for I well knew, that had I possessed ever so much knowledge or sagacity in my profession, they would avail nothing in my favor. The principal means which introduce a physician into business are as follows:

1. The patronage of a great man. From this quarter I had no hopes.
2. The influence of extensive and powerful family connections. From this quarter likewise I had nothing to hope.

- 3dly The influence of a religious sect or political party. At the time of my settlement in Philadelphia the influence of the religious society in which I had been chiefly educated, viz the Presbyterians, was too small and too much divided to afford me much support. Besides I was too feebly attached to their principles and forms to have any claims upon them. My intercourse with other sects while I was abroad had led me to consider all denominations of Christians with a more equal eye than I had done in early life, and had divested me of an undue predilection for either of them. The Presbyterian society was moreover not only small and divided, but it was the object of the jealousy of two societies, viz Quakers and Episcopalians, who possessed between them the greatest part of the wealth and influence of the city. It was in vain, therefore, to expect patronage from either of them. The Quakers had long been in the habit of confining their business chiefly to persons who belonged to their society or who favoured their views in politics. I do not complain of this conduct, it is natural. I mention it as a reason why I had recourse 4thly, to the only mode of succeeding in business which was left for me, and that was by attending the poor. I had been much struck in reading when a boy that Dr Boerhaave had said that "the poor were his *best* patients, because God was their paymaster." I had heard that Dr Cullen had been established in Scotland and Dr Fothergill in London chiefly by their extensive and successful practice among the poor. My natural disposition made this mode of getting into business agreeable to me, for I had a natural sympathy with

distress of every kind My conduct during my apprenticeship moreover paved the way for my success in adopting it, for I had made myself acceptable at that time to the poor by my services to them, and in a few months I was fully employed I recollect at one time in the first year of my settlement, I prescribed after returning from a morning walk for sixteen different patients and charged but one of them Several of my poor patients lived at Kensington and in distant parts of the Northern Liberties and Southwark and some of them lived as tenants at the country seats near the city These I visited and mostly on foot, for the first years after my settlement, and supplied them with all the medicines they required out of my own shop I soon found my labors were not in vain The reputation ascribed to some cures I had performed, and the faithful attendance I was said to give my patients where no reward was expected, in a little while begat other business I had seen the Suttonian manner of *giving* and *treating* the small pox in London and introduced it into our city The mode of infecting the arm by a small puncture, instead of a long incision, was a very popular one, and brought me many patients, some of whom continued to employ me in other diseases I had learned likewise from my master Dr Cullen to give but few medicines in diseases, and to rely more upon diet and drinks than had been common in Philadelphia This likewise helped to introduce me into business The circumstances that influence opinion and choice and of course the fate of a physician are too numerous and many of them too trifling to be mentioned The following fact will best illustrate this remark, and shew that medical skill has but little share in them I was once sent for to see a respectable Scotch sea captain in Southwark I had never heard his name before After I had examined his disease, he told me that he had great confidence in me and that he had made choice of me as his physician because he had often witnessed my decent behavior in time of divine service in the Rev Dr Allison's church This man employed me as long as he lived, which was twenty years afterwards, and his recommendations brought me several families in his neighborhood Several other persons made it their business to recommend me to their friends whose names I take great pleasure in recounting They were, the Rev Mr William Marshall by whose means I was employed by nearly every family in his congregation Thus congregation it is true was at that time small and poor, but their business was useful to me David McMurtrie, a Scotch merchant, had been acquainted with my mother and had formed an attachment to me upon her account before I went abroad Upon my return, he took me by the hand, and recommended me to his acquaintances as a physician His manner of doing this was artful, and therefore not ascribed to any interest he took in my establishment If he heard of anybody being very ill, he made it a practice to enquire who was his Doctor If my name was not mentioned, he expressed his surprise at it, and added long details of my opportunities of instruction in Edinburgh, and of my having been the pupil of the two Hunters in London, both of whom he knew in early life Mrs Patten, a celebrated midwife, was very successful

in speaking in my favor One of the most friendly and profitable families that I ever attended, employed me in consequence of her recommendations In addition to the aid I derived from the circumstances and friendly exertions that have been mentioned, I was a good deal assisted by being appointed Professor of Chemistry in the College of Philadelphia the month after my arrival This held me up to public notice now and then in the newspapers, and made my name familiar to the public ear much sooner than it would have been It was likewise an immediate source of some profit For this appointment I was indebted to the early friendship of Dr John Morgan, who first advised me to qualify myself for it before I went to Edinburgh in 1766

In the Autumn of 1780, I was attacked by the prevailing epidemic of that season, known and described by the name of the breakbone fever It yielded in a few days to an emetic and bark Upon my recovery from this fever and before I had left my room, I dreamed that a poor woman came to me just as I was getting into my chair in Penn Street, and begged me to visit her husband I told her hastily, that I was worn out in attending poor people and requested her to apply to another Doctor "O! Sir (said she lifting her hands) you don't know how much you owe to your *poor* patients It was decreed that you should die by the fever which lately attacked you, but the prayers of your poor patients ascended to heaven in your behalf, and your life is prolonged only upon their account " This answer affected me so much that I awoke in tears I have been as little disposed to superstition as most men, and have often exposed the folly of being influenced by dreams, by explaining their cause by obvious physical principles The dream I have related left a deep and lasting impression upon my mind It increased my disposition to attend the poor, and never, when I could not serve them, to treat them in an uncivil manner

For many years after I settled in Philadelphia I was regulated in my practice by the system of medicine which I had learned from the lectures and publications of Dr Cullen But time, observations, and reflection convinced me that it was imperfect and erroneous in many of its parts The discovery of its imperfections and errors produced a languor in my mind in discharging the duties of my profession, and a wish at times to relinquish it In some diseases my practice was regulated by theory, but in others it was altogether empirical I read, I thought and I observed upon the phenomena of diseases, but for a while without discovering anything that satisfied me The weight of Dr Cullen's name depressed me every time I ventured to admit an idea that militated against his system At length a few rays of light broke in upon my mind, upon several diseases These were communicated first to my pupils in my lectures, and afterwards to the public in a volume of observations and inquiries in the year 1786 In the year 1789 I was chosen successor to Dr Morgan in the chair of the theory and practice of physic in the College of

Philadelphia It now became my duty to deliver a system of principles in medicine After much study, and inquietude both by day and night, I was gradually led to adopt those which I have since taught from my professor's chair, and the press The leading principle of my system was obtruded upon me suddenly, while I was walking the floor of my study It was like a ferment introduced into my mind It produced in it a constant and endless succession of decompositions and new arrangements of facts and ideas upon medical subjects I was much assisted in the application of the principles that had occurred to me, by conversing with my pupils Their questions and objections suggested many hints to me which enabled me to fortify my principles where they were weak, and to extend them to new diseases Dr Brown's system of medicine which was published about this time, assisted me likewise a good deal in my inquiries I adopted some of his terms in the new nomenclature of my principles From this circumstance, superficial readers have supposed that his system and mine are the same Several of my opinions were upon record, in my publications, before the name of Dr Brown was known in America, as a teacher of medicine, and many more of them are as much opposed to his system as they are to that of Dr Cullen

The system I adopted was not merely a speculative one It led to important changes in the practice Where it did not suggest new remedies, it led to circumstances in the exhibition of old ones, which determined their safety and success My practice from this time became much more successful than it had been before, and I experienced a pleasure in it, which reconciled me to all its toils, and caused me to rejoice in those acts of providence which had originally directed and restrained my studies of medicine

In the innovations which I at this time attempted, I was not actuated by ambition or a desire of being the founder of a new sect of physicians It was always one of my numerous weaknesses to hold great men in too much veneration, and no one in greater than my master Dr Cullen I was at first passive in my new opinions, and when I indulged them I as little expected their tendency and prevalence, as I now do to end my days at Lambeth, in possession of the See of Canterbury It is not to him that willeth, nor to him that runneth, but to the overruling hand of heaven that we are to look for the successful issue of all human events

Humble and unworthy instruments are often employed in promoting the physical as well as moral happiness of mankind, in order to confound the splendor of those external circumstances which attract, and fix the esteem of the world

The propagation of my new opinions had an immediate influence upon my business It lessened it, by precluding me from consultations, for most of my brethren in Philadelphia were devoted to Dr Cullen's system of medicine, and opposed to the least deviation from it It would be improper to ascribe my exclusion from consultations wholly to the influence of my new opinions The part I took in favor of my country in the American Revolution.

had left prejudices in the minds of the most wealthy citizens of Philadelphia against me, for a great majority of them had been loyalists in principle and conduct. It was said my meddling with politics was their reason for not confiding their health or lives to my care.

This was not true, for the same people had upon former occasions given a lucrative establishment, by their patronage to physicians who had been exclusively devoted to politics or other pursuits equally foreign to medicine, but these physicians thought and acted with them in matters that related to liberty and government. Other things contributed to offend my medical brethren besides the novelty of my opinions and practice. I had declared medicine to be a science so simple that two years' study, instead of four or more, were sufficient to understand all that was true and practical in it. I had rejected a great number of medicines as useless, and had limited the *materia medica* to fifteen or twenty articles and in order to strip medicine still further of its imposture I had borne a testimony against enveloping it in mystery, or secrecy by Latin prescriptions, and by publishing inaugural dissertations in the Latin language in the medical school of Philadelphia. In the latter I was so happy as to be completely successful.

I was often asked how I found time to discharge my business, compose lectures, answer letters, write for the press and attend so many different societies. I shall now answer that question.

1 I never went out of my house in a morning before 9, half past 9 and sometimes 10 o'clock, except called by a sudden indisposition, or by a consultation at an earlier hour. By this time I received all new applications so as to arrange them with the business of the morning.

2 I lost no time in my own house. The scraps of time which interposed between the hours I returned from visiting my patients and the times of eating I spent in light reading, or answering letters, or such pieces of business as required but little abstraction of mind. The evenings from 7, 8 or 9 o'clock when not engaged in business or company were always spent in study, sometimes in the same room with my wife and children, but latterly in a room appropriated to my use. I seldom left it till 11 or 12 o'clock at night.

3 After the year 1780 I rarely dined or spent an evening out of my own house.

4 I derived *rest* from fatigue in reading by writing, and from writing by reading so as to require no other relaxation of body or mind for many hours. I likewise varied my studies, by which means no one of them ever palled, and I think I preserved my mind in a more pointed state by this practice, I learned it from Rousseau's history of his life.

5 By visiting my patients in a carriage, I lost but little time out of doors. I was carried to them with more quickness and was less liable to interruptions and delays in the streets than when I visited them on foot.

6. As I advanced in years I became more frugal of my time. To a young

lady who was misspending her time, I once said I would willingly give a dollar, were it possible, for every hour she could not employ, and often have I when thinking of the lost hours of my youth, wished for "one ten thousandth of those hours that I did not work" or that produced no fruits of study when I was a young man

7 I obviated the usual effect of hot weather in producing an inability to read, and thereby a waste of time, by spending the hot months in writing for the press. The greater exertion necessary to compose than to read, always obviated sleepiness. It had the same effect upon me after dinner and late at night.

Many new ideas occurred to me when riding, walking, or between the times of my waking and leaving my bed in the morning. I made it a practice to commit them to paper with a pencil when absent from home. In sickness and in the convalescence from fever, many new ideas were likewise obtruded upon my mind. In writing it was likewise invigorated, so much so, that I have more than once relinquished an opinion I sat down to defend, and embraced the one that was opposed to it. Conversations often suggested new views of subjects, even with persons who knew less of them than myself. But *teaching* was the principal means of increasing new combinations in my mind. They frequently occurred in my chair, and were delivered extempore to my pupils. The nature of my profession prevented my trying the effects of solitude upon my intellectual faculties, but the few fortuitous experiments that I made gave me no reason to expect anything from it, for I do not recollect ever acquiring a single idea by *sitting still* and doing nothing in my study.

In acquiring knowledge I did not depend exclusively upon books. I made, as far as was in my power, every person I conversed with contribute to my improvement. I was visited by many literary strangers, and I kept up a constant intercourse with several of the most distinguished philosophical characters who resided in, or occasionally visited Philadelphia. As I wished to be correct, in the knowledge I acquired by conversation, I made it a practice to record it in a book kept for that purpose after the manner as I supposed of Mr. Boyle. By thus committing it to paper, I was able to use it more confidently in my lectures and publications.

In reading borrowed books, I always made extracts from them, and marked down references to the pages of my own books in my common place book. As soon as I determined to publish upon any subject, I opened a head for it, and set down all such facts and thoughts as were related to it, that occurred to me in reading, conversation and reflection.

My new opinions and practice in medicine had for many years before 1793 produced a good deal of secret hostility to me in many of my brethren. It discovered itself I have said in their opposition to my being called into consultation with them. It appeared likewise in the business of the College of Physicians. One of my brethren discovered his enmity to me in constant

efforts to dissuade the students of medicine from attending my lectures The success which attended the remedies which it pleased God to make me the instrument of introducing into general practice in the treatment of the fever of 1793 produced a sudden combination of all who had been either publicly or privately my enemies, and the most violent and undisguised exertions to oppose and discredit those remedies Dr — led the van in a publication against them It was followed by many others from practitioners of less note The influence of these publications threatened the depopulation of the city For a while I opposed them with gentleness in private conferences with my brethren in the streets, and in several friendly and respectful communications to the College of Physicians It was all to no purpose The sudden increase of my business and the public effusions of gratitude which issued from many persons who ascribed the preservation of their lives to my remedies, produced fresh acts of hostility towards me I saw marks of the most inveterate malice in their conduct, but I saw what vexed and distressed me much more—and that was marks of ignorance of the most common and obvious facts and principles in epidemics Never did I feel less unkindness to a fellow creature than at this time I considered myself as shortly destined to the hearse and ambition of course held forth no prospects of future advantages from a victory in a contest with my brethren No, citizens of Philadelphia, it was for your sakes only I opposed their errors and prejudices, and to this opposition many thousand people owed their lives Had I consulted my own interest or reputation, I would have concealed my remedies, instead of communicating an account of them to the apothecaries, who derived large sums of money from the sale of them, much less would I have endeavoured to teach the people to cure themselves by my publications in the newspapers, after they were deserted by their family physicians

In reviewing my conduct upon this occasion I have examined its motives with leisure and severity and have not been able to criminate myself I condemn myself only for some harsh expressions which I made use of in speaking of the conduct and practice of those who set themselves against me The occasion will palliate, if it does not justify them I was contending with the most criminal ignorance, and the object of the contest was the preservation of a city

The most offensive thing I did to my brethren was refusing to consult with them This was an effect of a painful sense of duty to the sick, who are always the sufferers or sacrifices by consultations between physicians of opposite principles and practice I had often before the year 1793 seen and deplored their consequences without daring to object to them At this time, I was impressed with a more affecting sense of their folly and wickedness, and to my independence in refusing any longer to submit to them I owe the rapidity with which I ripened and established my mode of practice To prevent the recurrence of the fever, I early pointed out its domestic origin In this opinion I was opposed by nearly the whole College of Physicians, who

derived it from a foreign country, and who believed it to be a specific disease. They were followed by nearly all the physicians of Philadelphia.

Soon after the fever left the city I dissolved my connection with the College of Physicians. It had long been disagreeable to me, and I derived no improvement from it, equal to the time my attendance upon its meetings consumed. The leading members of it had now, moreover, become my open enemies.

1762 — 1836

CHRISTOPH WILHELM HUFELAND

John Stuart Mill remarks in his *Autobiography* that "These only are happy who have their minds fixed on some object other than their own happiness, on the happiness of others, on the improvement of mankind, even on some art or pursuit followed not as a means, but as itself an ideal end. Aiming thus at something else, they find happiness by the Way." Among those of whom Mill speaks must undoubtedly be included the majority of doctors. Whoever enters the profession of medicine, expecting to enjoy a life of ease, will be sorely disappointed. The practitioner's ordinary professional duties are frequently so arduous as to leave little time for recreation. Yet, even under such circumstances, as Hufeland indicates, the doctor finds that his life becomes a living expression of the medical art and achieves satisfaction therein.

MY LIFE as a practitioner in Weimar was in fact much harder, than many a physician practising now can imagine. Not only did I have to run around on foot from early morning until evening, for Weimar was one of the middle-sized cities that are too small to ride around in, and yet too large for a pedestrian not to become very tired, but in addition I had a country practice. Sometimes a tenant, sometimes a rich peasant, a rural pastor, or an estate owner sent a wagon or only a horse, often a poor one, to fetch me. Sometimes these visits were to places four or five miles away, most frequently beyond the Etter Hill, to Schwerstadt, Krautheim, Vippach, Brembach, Colleda, Beichlingen, Wiehe, Heldrungen, as far as Monchspiffel, where in winter or during the spring thaw my life was often endangered because of the abominable roads. And the most burdensome thing was that at the same time in accordance with the custom which was then almost generally prevalent, I had to administer the medicine myself and consequently had to play the apothecary also. Thus when the visits were over, I still had to make and dispense decoctions, powders, and pills, and what was for me even more troublesome was that often at 9 o'clock in the evening when I was completely fatigued and exhausted I had to sit down and enter in my account book the medicines that were dispensed daily, so as to be able to present the bill at the end of the illness or at the end of the year. Yet this had the advantage of compelling me to keep my journal in order. Likewise, the dispensing had various advantages. I became better

acquainted with the medicaments, was able to convince myself of their value and genuineness, and I was certain that nothing was overlooked in their preparation. A further important advantage of dispensing oneself was that while preparing the medicines I often had some good idea about this or that to be added (just as a cook adds this or that spice), which increased their effectiveness. Not to mention the infinitely greater confidence, with which the patient received his medicine directly from the doctor's hand, and it is known how much this contributes to its action.—In short, it was in every respect an excellent practical school through which I passed during these first ten years, and so I enjoyed the best preparation for my subsequent academic career, of which I didn't even dream at that time.

In the evening I was often so exhausted and depressed by worries that I wished that this might be my last night—*Perfer et obdura, dolor hic tibi prodest olim*, was what I told myself then.

It is certainly one of the chief complaints of the practising physician that he is not sure of having even a moment for himself. Even the night is not his, and in this respect the lowliest woodchopper enjoys an advantage, for in the evening, after his work is over, he can relax, shut his door, and be able to count on having a rest. However, two great consequences for one's inner life arise from this circumstance, in the first place, the great idea, the basis of all Christianity—not to live for oneself but for others—is always kept alive in one's soul and always summoned into practical life,—secondly, that he accustoms himself never to count with certainty on anything—not even on joys and pleasures,—a characteristic which is very useful in this uncertain life of ours on the earth. I recall, for instance that I desired greatly then to hear the beautiful new opera “Azur and Zenire,” and had bought tickets for it three times, but that each time I was kept from seeing it by unforeseen events in my practice. Thus I enjoyed few of what are usually called pleasures. My only recreation and amusement, aside from the quiet domestic hours with my father and sisters, was to occupy myself with science and to meet several friends and persons of wit.

1777 — 1867

JAMES JACKSON

James Jackson, who has been described as “perhaps the most conspicuous character in the medical annals of Massachusetts” was without a doubt one of the most distinguished physicians of his day. Born in 1777, Jackson attended the Boston Latin School and Dummer Academy, and graduated from Harvard in 1796. In the following year, he began to study medicine with a Dr. Holyoke of Salem. Two years later (1799), Jackson went to London where he was a dresser at St. Thomas's Hospital, working with the surgeon Henry Clune, and also attended Astley Cooper's work at Guy's. In addition, he also studied with William Woodville, who after Jenner, was the best-known authority on vaccination.

During the latter part of 1800, he returned to Boston and began to practice. Having brought with him a supply of "cowpox matter," Jackson began to vaccinate and thus achieved a felicitous beginning for his practice. In this, he co-operated with Benjamin Waterhouse who had started the practice of vaccination in Boston in July 1800. It is curious to note that although Jackson had been in practice since 1800, he did not receive his doctorate in medicine until 1809, one year before he was elected to the first professorship of clinical medicine at Harvard. This position he held until 1812, when he succeeded Waterhouse as Professor of the Theory and Practice of Medicine at Harvard. He retained the chair until his resignation in 1836. When the Massachusetts General Hospital was opened in 1821, Jackson was appointed Acting Physician. Until his resignation in 1837, he remained one of the active and influential members of the hospital staff.

James Jackson contributed extensively to medical literature but his most lasting contribution is the *Memoir* of his son, written shortly after his death. James Jackson, Jr. had shown brilliant promise as a student in Paris of the famous clinician P. C. A. Louis. His premature death shortly after returning to Boston was felt to be a great loss by his contemporaries. This is one of the classics of American medical literature. Jackson died in 1867.

ON OCT 1, 1800, I began business. Vaccination had been introduced about the time that I commenced my studies, but the practice had not been extensively adopted at that day even in England. Dr. Woodville of London was physician of the Pancras Smallpox and Inoculation Hospital, where he had attended to the subject of vaccination more carefully and more extensively than any other, not excepting Dr. Jenner. I placed myself under his care (for ten guineas, I believe), and learned all then known about that business. The practice of vaccination had just been introduced here, and Boston was full of it—so far as talking went.

My friends took me up on that account, so that in that October I derived \$150 from that source. I also derived just as much from other business, that made my fees amount to \$300 the first month. In the remaining 11 months of my first year I earned \$500, or nearly \$50 a month, or \$800 for the year. I must say that everybody talked to me of vaccination so that I got to fear that people would think I could talk of nothing else, and therefore before my first winter was over, I rather avoided the subject. However, the cow-pox gave me notoriety, and that is a great advantage to a young man if it comes to him fairly, without any tricks.

[Scarcely a week after his arrival home he wrote to his friend John Pickering, as follows.]

Boston, October 7, 1800

(Received November 17, 1800)

Dear John,— I am thinking of cow-pox. If I had matter enough I could make a *mint* of money in a *bit* of time. Do wait on Mr. Wacksel with the enclosed letter and call when he directs to get a package from him for me. Send the package as soon as possible, or if he gives you two, send them by different vessels from

London or Liverpool Ask Mr Wacksel if there is anything to pay and pay him I will pay you when you come this way

Now I do not ask this but command it, for it may be very important to my future fortune, so that I will not give you leave to neglect it. Everybody here is in a rage to have the cow-pox I brought matter here which has nearly failed and I fear will quite If so, I may not be able to get a supply till this reaches me from London It is late in the evening and the vessel sails in the morning

Yours very truly,

J Jackson

Boston, November 13, 1800

(Received December 24, 1800 at London)

Dear John,—I enclose a letter from Mr Bancroft I wrote to you by the Rising Sun more than a month since I then enclosed you a letter from Mr Wacksel and gave you a commission perhaps troublesome enough I shall the more regret if it has been so because it is now unnecessary When I arrived here everybody was talking of cow-pox My friends knew I had attended to this disorder and understood that I should bring out the matter of the disease Higginson particularly was recommending me to everybody Little expecting these circumstances, I had brought with me a small piece of thread and four lancets charged with the matter I very soon made use of the matter I had At the time I wrote to you I was apprehensive that it would all fail—and the next day I ascertained that it had so done You may conceive my embarrassment I appear to have been exalted only to fail The ignorant would not know that no precaution of mine would have given effect to the matter I had used I believe I looked blue See if my letter to you at that time is not tinged with this colour Dr Waterhouse had promised a supply, but I could not depend upon having it in season I knew that Dr Manning of Ipswich had received matter from his brother whom we saw in London, but it was said that he kept it to himself Driven by despair, I went secretly to Ipswich determined to pay any price for a supply My success was here as complete as unexpected The Doctor gave all I asked and refused all compensation Since that time, with due interruptions I have gone on as well as I could wish, and gained credit by my resource at a moment when my friends were in despair I have not, however, had so large a share of cow-pox business as I expected, because people have grown more cool than they were on the subject, and because the matter is now in the hands of all the physicians here For this, however, I have been abundantly compensated by a much larger share of other business than I expected Probably I have had more in the six weeks since I arrived than I shall have in any other six weeks in the course of the year to come What I have had would maintain me and a wife in a snug way I mean to try in the course of a few months whether what I shall have will do so

1783 — 1840

CONSTANTINE SAMUEL RAFINESQUE

Although not a physician, Constantine Rafinesque may justifiably be included in this medical company He represents a type of irregular practitioner quite common

on the American scene during the nineteenth century, especially on the frontier. Born in 1783, at Constantinople as the son of a French merchant, Rafinesque embarked on a "Life of Travels" at an early age. In the course of his wanderings he became a roving naturalist, and made important contributions to the botany and systematic zoology, especially the classification of the fresh water fishes and bivalves, of eastern North America.

It is as a *Pulmist*, or "specialist" in the treatment of the diseases of the lungs that Rafinesque is considered here. In some respects, the treatment for pulmonary consumption that he recommended was in advance of the views current in his day. Thus, he discouraged bloodletting, either by leeches or venesection, and advised the building up of general health by a good diet including milk, fruit and green vegetables, avoidance of alcohol and other "poisons", proper elimination, and outdoor life. On the other hand, he held in high esteem Pulmel, a vegetable concoction with which he claimed to have cured himself, also advised patients to take exercise on horseback. Rafinesque died in Philadelphia in 1840 in straitened circumstances.

HAVING cured myself completely in 1828 of my chronic complaint, which was the fatal Phthisis, caused by my disappointments, fatigues, and the unsteady climate, which my knowledge in medical botany enabled me to subdue and effect a radical cure. I entered into arrangements for establishing a Chemical manufacture of vegetable remedies against the different kinds of Consumption. This succeeded well. I introduced also a new branch of medical knowledge and art. I became a *Pulmist*, who attended only to diseases of the lungs, as a Dentist attends only to the teeth. Being thus the first *Pulmist*, and perhaps the only one here or elsewhere. This new Profession changed my business for awhile, yet enabling me to travel again in search of plants or to spread my practice, and to put my collections in better order, publishing many pamphlets, &c.

In 1829 I gave a public proof of my art, in printing a small book called the *Pulmist, or the art to cure the Consumption*, and many hundreds of individuals, whom I have cured or relieved are another striking proof of the beneficial results of my new practice.

1762 — 1829

NATHAN SMITH

Nathan Smith was one of the earliest and foremost of the generation of medical men who came to the front during the quarter-century immediately following the Revolutionary War. While some of the most familiar names of this period are of physicians and surgeons of the cities on or near the Atlantic seaboard (Benjamin Rush, Samuel Bard, David Hosack), yet from numerous points of view those of the frontier (Ephraim McDowell, Daniel Drake) are more interesting. In many ways, Nathan Smith was closely akin to this latter group.

Born at Rehoboth, Massachusetts, he spent his early years in parts of Vermont and New Hampshire which were scarcely less frontier settlements than were Ken-

tucky and Ohio His first medical training was received as an apprentice, and in 1787 Smith set up in practice After two years, however, he realized the need for further training and entered the recently founded Harvard Medical School at Cambridge Graduating in 1790, he returned to his practice In 1796 Smith proposed that a chair of medicine be created at Dartmouth College While waiting for action to be taken on this proposal, he went to Edinburgh and London for a period of study Finally, in 1798, the trustees of Dartmouth College appointed Smith as professor "to deliver public lectures upon Anatomy, Surgery, Chemistry, and the Theory and Practice of Physics," thus filling not a chair, but as Oliver Wendell Holmes remarked, a "settee of Professorships" He maintained his connection with Dartmouth until 1816, even though Yale in 1812 had appointed him professor of medicine, surgery, and obstetrics In addition to his work at Yale, when a medical school was opened in Bowdoin College in 1821, Smith also taught medicine, anatomy, surgery, and obstetrics there during the summer

While carrying on these multifarious teaching activities, Smith conducted a large practice, a fact so clearly revealed in many of his letters Equally eminent in medicine and surgery, his *Practical Essay on Typhus Fever*, published in 1824, is now regarded as a medical classic As a surgeon, he devoted considerable attention to operations for cataract, and in 1821 he also performed an ovariectomy on a patient in Connecticut Nathan Smith died in 1829 at the age of 67

[March 28, 1811]

Dear Sir

I have this day received your favor enclosing the money which I left with Mrs Derby which came safely to hand, and have enclosed to you Dr Abbot's note which you will perceive had turned into an execution and which you will find endorsed satisfied I will also enclose to you the note against Dr Nye and Dr Foster as soon as I can find it

I left Lancaster on the day I wrote you from that place and arrived at Brattleborough on Sunday morning after We were obliged to wait there for the stage till Tuesday morning and to fill up my time I was engaged to reduce a dislocated shoulder which had been dislocated nine weeks I succeeded in about half an hour Afterwards on the same day a child was brought to me with cataracts in his eyes

The child was a beautiful and very sprightly boy of three years old The question was whether we should operate immediately and run the risk of failing in the operation from the restiveness of the child, or defer it till the child was ten or twelve years old Considering how much the child must lose by being blind so many years and how very troublesome it would be for the parents, I determined to attempt an operation which was effected in the most safe and perfect manner and I have no doubt of final success in the case At Charlestown I amputated a finger and performed for a Hydrocele

I arrived at home last evening, finding my family and friends all well

I am with sentiments of esteem,

Your friend and Servant

NATHAN SMITH

[January 7, 1821]

I have performed many surgical operations in the last year, and some of great importance My success has been very great as respects curing, and if my patients

had been of the right sort, my business would have been very good, but alas, many of them have been poor, and the people in Connecticut have no idea of rewarding professional men except by compulsion or by being begged. The lawyers compel, and the priests beg for pious purposes.

Please to remember me affectionately to Mrs Shattuck, Mrs Davis and Mrs Derby

I am with sentiments of esteem,

Your Obedient Servant
NATHAN SMITH

1798 — 1859

WILLIAM A. ALCOTT

The relation between a doctor and his patient is basically emotional, owing to the fact that the patient, *feeling* some immediate need for relief or cure, *wants* to be treated. By this act, the patient entrusts himself to the doctor, but at the same time, needing assurance, the patient wants to recognize the doctor as an authority, as a person of superior knowledge. To retain this confidence, the doctor must show that he has the facts of the disease at his command. Furthermore, the medical practitioner in dealing with patients must take account of their prejudices, and try to carry out a campaign of education at the same time. The difficulties of a nineteenth-century practitioner in this respect are revealingly depicted by William Alcott. In some points, his remarks echo those of other physicians. For instance, compare Alcott's comments on being all things to all men with those of Paracelsus (page 147), or his recognition of his limited knowledge with the experiences of J. Marion Sims (page 172).

NEARLY at the beginning of my practice in medicine, I was called to see a fine and hitherto healthy youth, twelve years old, but who had for several weeks before application was made to me, complained of a steady and sometimes severe pain in his bowels, attended with more or fewer febrile symptoms and a loss of appetite.

In endeavoring to trace out carefully the causes of his disease, the first things that attracted my attention was his employment. His father was a blacksmith, and being in moderate circumstances and destitute of any other help besides this son, had for a considerable time required him to perform the work of an adult, or nearly such. It had not been suspected at the time, that the work injured him, though he had sometimes complained of great fatigue, and of a slight weakness and uneasiness in the place where the pain had now become fixed. As the result of my investigations, I came to the conclusion that he had been overworked, and certain ligaments of the bowels had been weakened.

My treatment in the case was at first mild and palliative, in the hope that after a few days of rest the trouble would disappear. Instead of this, however,

it grew worse. At my special request, various counselling physicians were called in, but I do not know that they were of any service to me. No new light was thrown on the case, though we could all converse very learnedly on the subject.

Like many other young practitioners, I was at that time apt to indulge in gloomy fears about poisons. I seldom had a case of acute disease, without suspecting their influence. I suspected poison now, and accordingly made search into every possible nook and corner whence such an influence could possibly have emanated. For a long time nothing could be found.

One day, on examining a pot of pickled cucumbers which had hitherto escaped observation, I found that a part of its glazing had been destroyed by the acid. I no sooner saw this than I was ready to say, *eureka* (I have found it), and to inform the family and my patient. It appeared that the pickles had been there for some time, and that the boy had eaten of them very freely. The parents and friends, though they had much confidence in the wisdom and skill of their physician, were very slow to believe in the injurious tendency of the pickles. They admitted the danger of such cases generally, but how could the boy be injured, and not the rest of them? they asked. They forgot, or did not know, that the poison would be more likely to affect one who was weakened in the abdomen for other causes, than those who were sound, especially when he took much more of it into his stomach than they did.

In my suspicion about lead poisoning, I had very little sympathy from those around me. Even the counselling physicians had little confidence in any such existing cause of disease. They were nearly as ready as other people to leave the case in the dark, and to say practically, "The finger of Providence is here," or, in other words, It comes of some cause which God alone knows or *can* know.

How much of human ignorance—ay, and of human credulity and folly, too—is clustered round the well-known decision of many a court of inquest viz., "Died by the visitation of God!" What do they mean by it? Do they suppose that since Satan or some other personage whom we call Death, is guilty of striking us down here and there, those who are not "struck with death" are struck down by the great Source of light and life?

The far greater probability is, that they know not what they *do* mean. Mankind are not addicted to thinking, especially on subjects of this sort. It is much easier, or at least much lazier, to refer all our ills and complaints, as well as their unfavorable terminations, to God or Satan, friend or foe,—to some agency exterior to themselves, than to consider themselves as the probable cause, and proceed to make diligent search for their own errors.

Thus it was, in a remarkable degree, in the region where it was my lot to meet and palliate and try to cure diseases. I say, here, *cure*, for the idea would hardly have found a lodgment, at that early period, in any human brain which could have been found in that region of rural simplicity, hardly in my own somewhat more highly enlightened cranium, that *medical men never*

cure, and that when people get well, it is the result of the operations and efforts of nature, or of nature's God, who is doing the best thing possible to set matters right

It was even deemed by many as not only foolish but almost sacrilegious, to say much about the causes of disease, and especially about lead. And then to talk about lead as connected with the use of their favorite red earthen, which had been in use time immemorial, and which had never, in all past time, killed anybody, as they supposed, was the dictate of almost any thing else rather than of good, sound, sober, common sense

You can hardly imagine, at this day, in the year 1859, what an air of incredulity the gaping countenances of the family and neighbors of my young friend and patient presented, when I told them stories of lead disease in different parts of the country, especially of such cases as were then recent and fresh in my memory

There was such a hostility of the public mind to the idea that his disease was induced or even aggravated by lead, that I receded in part from my suspicions. At least, I proceeded, with fresh energy and enthusiasm, to search for other and more probable or popular causes. Cause there must have been, of some sort, I was confident, while to all my efforts of this kind the friends of the boy stood opposed. They did not, it is true, say much against it, but then it was perfectly evident from all their conversation and conduct that they regarded it as not only idle, but presumptuous, perhaps wicked. How can it be, they seemed to say, by those looks and actions which so often speak louder than words, that this young doctor is always trying to ferret out the causes of disease, while Dr — (my predecessor) never attempted any such thing, but rather dissuaded us from it?

Yet thus it was precisely. For three long months I was endeavoring to meet and obviate the symptoms of a disease which I secretly believed was induced by lead, but of which I had no such strong evidence as would have justified the positive affirmation that it was so, or prevented me from searching for other causes. This state of mind was by no means favorable to my success as a medical practitioner, for it somehow greatly impaired or weakened their general confidence in my wisdom and skill. Had I, on the other hand, "looked very wise," declared the disease to be so and so, with great pertinacity, and adhered, through good report and through evil, to my opinion, whenever it was assailed, and withal manifested desire to receive medical counsel, I should have had a larger measure of their esteem, and a very much larger measure, as a professional man, of their confidence. They might then have thought me a very wise and good physician.

A man who wishes to be greatly popular in the world must learn the ways of the world, and walk in them more or less, whether they are crooked or straight. He must not be overmodest, or overhonest, nor must he be oversolicitous to improve his own mind or heart, or encourage others, by precept or example, to walk in the way of improvement. He must not only make up

his mind to take the world as it is, but to suffer it to remain so The world does not like to be found fault with, it has a great deal of self-confidence

The young man, in the end, recovered, not, as I now believe, in consequence of the treatment, but in spite of it Had he been nursed carefully from the first, and kept from every source of irritation, both external and internal, even from food, except a very little of the mildest sort, just enough to keep him from absolute starvation, and had his air been pure and his temper of mind easy, cheerful and hopeful, he would probably have recovered much sooner than he did, and with far better prospects for the future But he had been frightened about himself, from the very first, by my own inquiries about poison,—which had unwarily been communicated to him,—and his fears never wholly subsided

How much wisdom from both worlds does it require in order to be a physician! The office of a medical man, I repeat, is one of the noblest under the whole heaven The physician is, or should be, a missionary Do you regard this assertion as extravagant or unfounded? Why, then, was it made an adjunct, and more than an adjunct, in the first promulgation of the gospel, and this, too, by the gospel's divine Author? Why is it that our success in modern times, in spreading the gospel, has been greater—other things being equal—in America or China, in proportion as its preachers have attended to the body as well as to the soul?

At the time of my commencing the practice of medicine, I was no more fit for it than I was to preach the cross of Christ, I was honest, sanguine, philanthropic, but I was uneducated I knew very little, indeed, of human nature, still less did I know of the sublime art of becoming all things to all men, in the nobler and more elevated sense of the great apostle Paul I would yield to no other compromise than such as he encourages, of course Let us be honest and truthful, though the heavens fall

1813 — 1883

J. MARION SIMS

The insecurity of the young practitioner facing his first patient—a situation common enough among doctors—finds almost classic expression in the experience of J Marion Sims Yet like so many other physicians, Sims overcame the shock of his initial plunge into the waters of medical practice, and went on to achieve eminence by solving a most intricate and difficult problem with which his practice confronted him The treatment of vesico-vaginal fistula—a condition in which there is an opening from the bladder into the vagina leading to incontinence of urine—had puzzled surgeons for a long time, but all efforts to find a cure had been in vain In 1845, Sims began his attempts to devise a therapeutic procedure that would be of some value, but it was not until 1849 that he achieved the first successful results The epoch-making character of this operation can hardly be conceived at present,

owing to the advances of obstetrics during the past 100 years. But at a time when a considerable number of women, because of crude obstetrical practice, ran the danger of this disabling condition, Sims's discovery came to them as a veritable boon from heaven.

I RETURNED to my home in South Carolina about the middle of May, 1835. I went home with everything prepared to begin the practice of medicine. I had had no clinical advantages, no hospital experience, and had seen nothing at all of sickness. I had been able to buy a full set of instruments for surgical operations, and I laid in a full stock of medicines in Philadelphia. My father rented me an office on Main Street. I had a sign painted on tin, that would reach one third of the way across the end of my office. It was certainly two feet long, and, like all young doctors just starting, I wanted to let people know where I could be found. I attended my office, and was ready for consultation and for patients. One morning, at the end of two or three weeks, as I was sitting in my office quietly, surrounded by my library, which consisted of seven books, octavo volumes, safely locked up in one of the little drawers in my bureau, Mr. Mayer, an important personage in the town, came whistling along. Mayer had been its mayor, he had been my tailor from the time I was a little boy. He had made coats for me before I was permitted to wear tails to them.

He said, "Good morning, Marion" (for nobody called me doctor). I had lived there all my life, knew everybody in the town, and everybody called me Marion. "Have you had any patients yet?"

I said, "No, Andy, I haven't had a patient yet."

"Well," he said, "I wish you would go up to my house and see my baby. It is very sick, and has been sick for some time. I wish you would go up pretty soon."

I said, "Very well, I will go up immediately." He passed on to his shop, and I walked up to his house. I thought to myself that this was a good beginning, really. Here is the most important personage in the town who is my first patient, and if Andy Mayer patronizes me my success will certainly be assured. When I arrived I found a child about eighteen months old, very much emaciated, who had what we would call the summer complaint, or chronic diarrhoea. I examined the child minutely from head to foot. I looked at its gums, and, as I always carried a lancet with me and had surgical propensities, as soon as I saw some swelling of the gums I at once took out my lancet and cut the gums down to the teeth. This was good so far as it went. But, when it came to making up a prescription, I had no more idea of what ailed the child, or what to do for it, than if I had never studied medicine. I was at a perfect loss what to do, but I did not betray my ignorance to the mother. I blandly said

"Mrs. Mayer, if you will have the kindness to send Jennie down to my

office in the course of an hour from this time, I will have medicine ready for the baby, and write out the directions how to give it "

I hurried back to my office, and took out one of my seven volumes of Eberle, which comprised my library, and found his treatise on the "Diseases of Children " I hastily took it down, turned quickly to the subject of "Cholera Infantum," and read it through, over and over again, to the end most carefully I knew no more what to prescribe for the sick babe than if I hadn't read it at all But it was my only resource I had nobody else to consult but Eberle By the by, he had a peculiar way of filling his books with prescriptions, which was a very good thing for a young doctor He was a good writer, and a very practical man, and would be considered good authority even at this time The most natural thing in the world for me to do was to begin At the beginning of his article of twenty or thirty pages there was a prescription, but I do not remember whether it was a powder or a mixture There was chalk in it So I compounded it as quickly as I knew how, and had everything in readiness for the arrival of Jennie She took it back to the house, and the mother began to give it according to the directions, which were written out I was very impatient for the time to come when I should make my visit, and see the effects of the medicine and the Eberle prescription I was there punctually on time I was very much surprised to find the baby very much as in the morning, no better and no worse I saw that as the medicine had done no good it was necessary to change it And so I requested Mrs Mayer to send Jennie down to my office again at a given time for a new prescription for the baby I turned to Eberle again, and to a new leaf I gave the baby a prescription from the next chapter Suffice it to say, that I changed leaves and prescriptions as often as once or twice a day The baby continued to grow weaker and weaker "Is it possible," I thought, "that this child can die? Did any young doctor ever lose the first patient he ever had, and just as he was starting out? Providence could not be so cruel as to allow me to lose my first patient, in a little town like this, with everybody talking about it, and especially the child of so important a personage as Mr Mayer " I felt very unhappy about it

Meantime, an old nurse was asked to come and take care of the child It is well understood that there is a curious antagonism between old nurses and young doctors They have an idea that young doctors don't know a great deal, and the old nurses are not very far from right This old nurse seemed to scrutinize me, and very particularly watched everything I said and did Nothing escaped her, and I felt very uncomfortable in her presence I wished that she had never come there However, one night I was sitting by the baby, in an anxious mood of mind, and wondering what was to turn up next I was feeling its pulse, and watching it carefully The old nurse sat on the opposite side of the bed, when she said, "Doctor, don't you think that this baby is going to die?" I said, "No, madam, I do not think so, not at all " Externally, I was very calm and self-possessed, but internally I was not, for I really did

not know what that child would do. Presently the child stopped breathing, and I thought it a case of syncope. I never dreamed that it could die. So I jerked the baby from the bed, and held its head down, and shook it, and blew into its mouth, and tried to bring it to. I shook it again, when the old nurse laid her hand on my shoulder gently, and said "No use shakin' that baby any more, doctor, for that baby's dead!" Well, I laid the baby back in the bed, and my feelings can well be imagined at the idea that I had lost my first patient. I attended the funeral, I was the chief mourner of all. Certainly its father and mother did not feel so badly over the loss of their child as I did at the loss of my first patient. I was very melancholy and sad, for I thought that everybody in town would know that I had lost my first case, and Mayer's baby at that, and everybody was sorry for him and for me.

About two weeks had rolled around, and the depression which I had felt had somewhat subsided, when Mr. Elias Kennedy came to my office one morning. Mr. Kennedy was foreman for Mr. Mayer, and I had known him all my life. He came in in somewhat of a hurry, and said

"Marion, my baby is real sick, and I wish you would go up to my house and see it. I hope you will have better luck with it than you did with Andy's baby."

I said, "Elias, if I don't, I'll quit the town." I went up to see Mr. Kennedy's baby, and, as bad luck would have it, it was about the same age and same size as Mayer's baby, the same prostrating condition of things, and the same disease. I was nonplussed. I had no authority to consult but Eberle, so I took up Eberle again, and this time I read him backward. I thought I would reverse the treatment I had instituted with Mayer's baby. So, instead of beginning at the first of the chapter, I began at the last of the chapter, and turned backward, and turned the leaves the same way, and reversed the prescription. The baby got no better from the very first. I did not have any consultation in the first case, for there was no doctor in town to counsel with, for my old preceptor, Dr. Jones, had gone to Tennessee on a visit to his sister, and he was the only doctor in the town besides myself. He returned while I was in attendance upon Mr. Kennedy's baby. As soon as he came home I went to see him. I said "Dr. Church," (everybody called him Dr. Church), "I lost Andy Mayer's baby since you have been away. If you had been here he would have lived. But he is dead, and now Elias Kennedy's is sick and I want you to go and see it and save it."

"I will go," he said, "with pleasure, Marion."

"But I want you to go at once," I said, "there is no time to wait."

So the dear, good old doctor went up with me to Elias's very cheerfully, and went into the room. He was clear-headed and looked at the patient carefully, and, at the first glimpse, he knew all about it. No questions were necessary, and immediately afterward he was satisfied. He proposed that we would have a consultation, and so we went out for that purpose. It was pretty hot in the house, and so we went out on the shady side, in the corner of the

chimney The first thing he said to me, when we got there, was "Well, Marion, that baby is going to die "

I said, "The devil, you say, you don't say that this baby is going to die?"

He said that it could not recover

"Then," I said, "if this baby dies, doctor, I shall never be your successor in this town, for I shall leave "

He replied, "Marion, that baby is going to die, it will die tonight " And it did die, and it died that night. Again I had to be chief mourner at the funeral of another little lost citizen of Lancaster I went home sadder than ever I just took the long tin sign-board from my office door There was an old well back of the house, covered over with boards I went to the well, took that sign with me, dropped it in there, and covered the old well over again I was no longer a doctor in the town of Lancaster

I thought I could make some improvements in the operation, and Anarcha was the next case Anarcha was the first case that I had ever seen, having assisted Dr Henry in her delivery She had not only an enormous fistula in the base of the bladder, but there was an extensive destruction of the posterior wall of the vagina, opening into the rectum This woman had the very worst form of vesico-vaginal fistula The urine was running day and night, saturating the bedding and clothing, and producing an inflammation of the external parts wherever it came in contact with the person, almost similar to confluent small-pox, with constant pain and burning The odor from this saturation permeated everything, and every corner of the room, and, of course, her life was one of suffering and disgust Death would have been preferable But patients of this kind never die, they must live and suffer Anarcha had added to the fistula an opening which extended into the rectum, by which gas—intestinal gas—escaped involuntarily and was passing off continually, so that her person was not only loathsome and disgusting to herself, but to every one who came near her

I made some modifications in the suture apparatus, such as I thought important, and in the catheter, and then operated on the fistula of the bladder But, like the others, she was only partially cured The large fistula was contracted, leaving only two or three smaller ones in the line of union, as in the other two instances The size of the fistula makes no difference in the involuntary loss of urine It will escape as readily and as rapidly through an opening the size of a goose-quill as it will when the whole base of the bladder is destroyed The patient is not cured so long as there is the involuntary loss of a single drop of urine It would be tiresome for me to repeat in detail all the stages of improvement in the operation that were necessary before it was made perfect These I have detailed in a surgical history of the facts, and to professional readers are still well known Besides these three cases, I got three or four more to experiment on, and there was never a time that I could not, at any day, have had a subject for operation But my operations all failed, so far

as a positive cure was concerned This went on, not for one year, but for two and three, and even four years I kept all these negroes at my own expense all the time As a matter of course this was an enormous tax for a young doctor in country practice When I began the experiments, the other doctors in the city were all willing to help me, and all seemed anxious to witness the operations But, at last, two or three years of constant failure and fruitless effort rather made my friends tired, and it was with difficulty that I could get any doctor to help me But, notwithstanding the repeated failures, I had succeeded in inspiring my patients with confidence that they would be cured eventually They would not have felt that confidence if I had not felt confident too, and at last I performed operations only with the assistance of the patients themselves

So I went on working without any progress, or at least permanent result, till my brother-in-law, Dr Rush Jones, came to me one day, and he said

"I have come to have a serious talk with you When you began these experiments, we all thought that you were going to succeed at once, and that you were on the eve of a brilliant discovery that would be of great importance to suffering humanity We have watched you, and sympathized with you, but your friends here have seen that of late you are doing too much work, and that you are breaking down And, besides, I must tell you frankly that with your young and growing family it is unjust to them to continue in this way, and carry on this series of experiments You have no idea what it costs you to support a half-dozen niggers, now more than three years, and my advice to you is to resign the whole subject and give it up It is better for you, and better for your family "

I was very much surprised at what he said But I said "My dear brother, if I live I am bound to succeed, and I am as sure that I shall carry this thing through to success as I am that I now live, or as sure as I can be of anything I have done too much already, and I am too near the accomplishment of the work to give it up now My patients are all perfectly satisfied with what I am doing for them I can not depend on the doctors, and so I have trained them to assist me in the operations I am going on with this series of experiments to the end It matters not what it costs, if it costs me my life For, if I should fail, I believe somebody would be raised up to take the work where I lay it down and carry it on to successful issue "

The experiments were continued at least a year after this conversation with Dr Jones I went on improving the methods of operating, eliminating first one thing and then another, till I had got down to a very simple practice Then I said "I am not going to perform another operation until I discover some method of tying the suture higher up in the body where I can not reach " This puzzled me sorely I had been three weeks without performing a single operation on either of the half-dozen patients that I had there They were clamorous, and at last the idea occurred to me about three o'clock one morning I had been lying awake for an hour, wondering how to tie the

suture, when all at once an idea occurred to me to run a shot, a perforated shot, on the suture, and, when it was drawn tight, to compress it with a pair of forceps, which would make the knot perfectly secure. I was so elated with the idea, and so enthusiastic as I lay in bed, that I could not help waking up my kind and sympathetic wife and telling her of the simple and beautiful method I had discovered of tying the suture. I lay there till morning, tying the suture and performing all sorts of beautiful operations, in imagination, on the poor people in my little hospital, and I determined, as soon as I had made my round of morning calls, to operate with this perfected suture. Just as I had got ready to perform my operation I was summoned to go twenty miles into the country, and I did not get back until late in the night. I looked upon it as a very unfortunate thing, and one of the keenest disappointments of my life, because it kept me from seeing all the beautiful results of my method. However, the next day, in due time, the operation was performed on Lucy. When it was done, I said, "Could anything be more beautiful? Now I know that she will be cured." It was with great impatience that I waited a whole week to see what the result of the operation would be. When I came to examine it, it was a complete failure.

I then said to myself, "There must be a cause for this. I have improved the operations till the mechanism seems to be as perfect as possible, and yet they fail. I wonder if it is in the kind of suture that is used? Can I get some substitute for the silk thread? Mettaer, of Virginia, had used lead, and I had used a leaden suture and failed. What can I do?" Just in this time of tribulation about the subject, I was walking from my house to the office, and picked up a little bit of brass wire in the yard. It was very fine, and such as was formerly used as springs in suspenders before the days of India-rubber. I took it around to Mr. Swan, who was then my jeweler, and asked him if he could make me a little silver wire about the size of the piece of brass wire. He said Yes, and he made it. He made it of all pure silver. Anarcha was the subject of this experiment. The operation was performed on the fistula in the base of the bladder, that would admit of the end of my little finger, she had been cured of one fistula in the base of the bladder. The edges of the wound were nicely denuded, and neatly brought together with four of these fine silver wires. They were passed through little strips of lead, one on one side of the fistula, and the other on the other. The suture was tightened, and then secured or fastened by the perforated shot run on the wire, and pressed with forceps. This was the thirtieth operation performed on Anarcha. She was put to bed, a catheter was introduced, and the next day the urine came from the bladder as clear and as limpid as spring water, and so it continued during all the time she wore the catheter. In all the preceding operations, where the silk was used for a suture at the base of the bladder, cystitis always resulted. The urethra was swollen continually, and the urine loaded with a thick ropy mucus. With the use of the silver suture there was a complete change in these conditions.

I was always anxious to see the result of all experiments, but this was at-

tended with such marked symptoms of improvement, in every way, that I was more anxious now than ever. When the week rolled around—it seemed to me that the time would never come for the removal of the sutures—Anarcha was removed from the bed and carried to the operation-table. With a palpitating heart and an anxious mind I turned her on her side, introduced the speculum, and there lay the suture apparatus just exactly as I had placed it. There was no inflammation, there was no tumefaction, nothing unnatural, and a very perfect union of the little fistula.

This was in the month of May, I think, though possibly it was June (1849). In the course of two weeks more, Lucy and Betsey were both cured by the same means, without any sort of disturbance or discomfort. Then I realized the fact that, at last, my efforts had been blessed with success, and that I had made, perhaps, one of the most important discoveries of the age for the relief of suffering humanity.

1815 — 1848

HORACE WELLS

In 1844, Horace Wells, a dentist of Hartford, Connecticut, employed nitrous oxide gas in tooth extraction and vainly endeavored to convince surgeons of its value. This wonderful discovery, however, brought only stark tragedy to himself and his family. Destiny worked obliquely with Horace Wells. In 1848 he sought death by his own hand, less than one hundred years later, his name was honored as one of the benefactors of mankind.

Horace Wells was born in 1815 at Hartford, Vermont, the son of intelligent, well-to-do parents. As a youth he showed a deeply religious inclination, and for a while considered the ministry as a career. In 1834, however, at the age of nineteen, he began the study of dentistry, obtaining the best professional education possible at that time. In 1836 Wells moved to Hartford, Connecticut, where he established an office and succeeded in building up a fine practice. His dexterity and skill soon made him popular, and he quickly took his place among the leading dentists of the city. Two years later he married Elizabeth Wales, of Hartford and published an interesting *Essay on Teeth Comprising a Brief description of their Formation, Disease, and Proper Treatment*. An extremely revealing passage from this book, dealing with his views on the practice of dentistry, is reprinted here.

In 1844 Wells witnessed an exhibition of the effects of nitrous oxide—laughing gas—and conceived the idea that it could be used for painless dental extraction. This idea he verified the day after the exhibition by himself submitting to the operation of having a troublesome wisdom tooth pulled. Shortly thereafter he arranged to demonstrate nitrous oxide before Dr. John C. Warren and his students at the Harvard Medical College. Unfortunately, the demonstration was not completely successful. Then, in October 1846, William T. G. Morton demonstrated the use of ether for surgical anesthesia, and before long the great anesthesia controversy was under way. The claims and squabbles for the credit of introducing surgical

anesthesia preyed on Wells's mind. In 1848, in New York, while mentally deranged because of constant self-experimentation with chloroform, he was arrested for molesting street walkers on Broadway. While in the Tombs, Wells committed suicide (see page 415).

I HAVE said that duty, in some instances, demands a change of occupation. If a young man selects the dental profession, with the intention of making it a business for life, and at length finds himself deficient in mechanical ingenuity, so that his operations prove ineffectual, it is then for his own interest as well as for the interest of those who might employ him, to abandon the profession forever. It is generally supposed, that if a dentist has been long established in business, he must, as a matter of course, be skillful, and frequently this is the only recommendation desired. I unhesitatingly assert that there are many who would not become good dentists, with ever so much practice, wholly for the want of that one indispensable qualification—natural mechanical skill. I have known those who have performed operations on teeth for many years, and then were unable to compete with others who could boast of but one year's experience. A skilful Dentist should in all cases be employed. There are many who are indifferent respecting this, and they imagine that any person can properly perform so simple an operation as that of filling the teeth, to arrest their decay. This is truly a great mistake, and not a few can testify to the fact from sad experience.

However simple the operation of filling the teeth may appear, it is, in reality, the most complicated, as well as the most important branch of the profession. An ordinary Dentist may succeed in performing all other operations tolerably well, while this remains beyond the reach of his skill. He may truly put gold into the tooth, and perhaps it will keep its place for some length of time, but if the work is not effectually performed, the decay will proceed as before, even if the gold remains.

1805 — 1884

SAMUEL D. GROSS

From an economic point of view, medical care is a commodity and must be paid for by some one. Traditionally, medical care has been paid for on the principle that each person should receive in accordance with his needs and each should pay in proportion to his means. In modern times this adjustable or sliding scale of medical charges has ceased to be an unmixed blessing to either patients or doctors. Throughout the nineteenth century, the American medical profession was concerned with the problems of the sliding scale and the credit system. Attempts were made repeatedly for over a century to control the former, and to eliminate the economic hardship to the doctor of the latter by establishing regular systems for payment, but these have been largely unavailing.

The experience of Samuel D. Gross, more than a century ago, brings this problem into sharp relief. The sentiments which he expresses are to be found over and over again in American medical publications throughout the nineteenth century. At the same time, his experience also indicates why medical research in America took so long to develop. Hard pressed to earn a living, doctors found it difficult to undertake scientific investigations, even when they were so inclined, because of lack of financial assistance.

THE income from my practice during the first year did not exceed three hundred dollars, if, indeed, it reached that sum. My patrimony was exhausted, and I had, unfortunately, to pay heavy board and office rent. Under these circumstances I had no business to marry, and yet, the following winter, I did marry. Left a widow at the age of twenty with one child, my wife was quite as poor as myself. We were greatly in love with each other, and as we could not brook separation any longer we consummated an engagement which had existed upwards of a year. Of course we were foolish, very foolish, but how could we help it? Poor people had often married before, and they had contrived to live and to thrive, and why should not we? We economized as much as we could, but it was up-hill work, and, after a vain struggle of eighteen months, we left the city, with sad hearts and tearful eyes, for Easton, where I soon acquired a respectable share of practice, the income from which enabled me to keep my head above water, although, for a while, not without difficulty. Gradually, however, I got into good business, and when I left, two years and a half afterwards, in October, 1833, for Cincinnati, I was generally regarded as a scientific practitioner. I soon made myself known as a hard-working industrious student. I spent all my leisure among my books, and attended with great assiduity alike the poor and the rich. To keep up and extend my knowledge of practical anatomy, I erected at the foot of my garden, directly in front of a hotel, a little building as a dissecting-room, and obtained a subject from Philadelphia, going there myself in a buggy for the purpose. I dissected generally several hours a day as long as my material lasted, doing the work with great care and neatness, and performing at the same time the more important operations unmolested. I obtained in this way a great deal of information, and, as I was anxious to impress my knowledge thoroughly upon my mind, it was my habit every evening to write out an account of my daily examinations. All my leisure during the summer months was spent upon the composition of a work on Descriptive Anatomy, which, however, I never entirely completed. I have still in my possession the manuscript of it. A few months more would have enabled me to finish it, but other business prevented, and I have not been sorry that it was never published. I am aware of no prior effort in the English language to change the nomenclature of anatomy from Latin into English, a plan which, at my suggestion, was adopted by my pupil, Dr. T. G. Richardson, now Professor of Surgery in the University of Louisiana, New Orleans, in his work on Anatomy, and subsequently by Pro-

fessor Leidy, of the University of Pennsylvania, in his textbook on Anatomy Among the French and German writers this peculiarity of nomenclature has been in use for at least two centuries

I had an ardent desire in my professional youth to become an experimentalist, not with a view of throwing light upon certain obscure points in physiology, and of earning some reputation My earliest inquiries were directed to the investigation of the temperature and coagulation of the blood, topics which, although they had received considerable attention, were in need of further examination Hewson and Thackrah of England had both written upon the subject, I had read their works, and noticed their defects A large field was spread out before me, and if I had not been obliged to earn my bread by my daily labor, which necessarily distracted my attention, I might have earned substantial reputation in this branch of study As it was, I worked hard, with little benefit The coagulation of the blood interested me very much, and I frequently visited the slaughterhouses in Philadelphia to examine this process in the ox, sheep, and hog Venesection was then a very fashionable practice, and I lost no opportunity of making experiments upon the temperature and coagulation of the blood of the human subject in health and in disease These investigations extended through several years, and resulted in some satisfactory conclusions, which, I now regret, were never published

Doctors are often defrauded of their fees The law, as a principle, regards every man as honest until he is proved to be guilty, and so, in the medical profession, every patient is considered to be honest, until the reverse is found to be the case—a contingency, I am sorry to say, by no means uncommon I have done a large share of what in this country is called an office practice, or what in Great Britain is known as a chamber business, and I have never refused to prescribe gratuitously for any one, however poor or humble, provided he informed me beforehand that he was unable to compensate me for my services On the other hand, I have often, after a laborious examination of a case, torn my prescription in the teeth of my patient when he told me, after the work was done, that he had no money, especially when he had about him any appearance of gentility If he was full or ignorant, or, to use a common expression, “did not seem to know better,” I sometimes forgave the offence “The laborer is worthy of his hire,” and people have no right to steal the time and services of a physician any more than they have to steal groceries, drygoods, or any other commodity The doctor must live by his labors, and, although our profession is a liberal one, we ought to make a proper distinction between the poor, properly so called, and those who are able, without any inconvenience, to compensate us for our services Boerhaave used to say that the poor are our best patients, because God is their paymaster All this is very well, but there comes a time when a man looks for something more substantial than a patient’s mere “God bless you, doctor!” There are many persons in every community who would rather part with their eye-teeth than a five

dollar bill in payment of a physician's fee. In my younger days, and, indeed, until after the age of fifty, I seldom neglected the call of a poor patient, and in my capacity did an immense amount of gratuitous work, including many operations involving great skill, much anxiety, and vast labor during the after-treatment. I am sure I render thus every year, at the most moderate calculation, services to the value of several thousand dollars. It was a common remark of my wife, that at my office I was generally more polite and attentive to the poor than to the richer class of patients, and I was induced to do this because a poor person's time is generally more valuable than that of one in better circumstances.

1821—1910

ELIZABETH BLACKWELL

When Elizabeth Blackwell set out to practice medicine, a number of unorthodox medical systems competed for the attention of physicians. Chief among these were homeopathy, hydropathy, and mesmerism. Each of these contained a grain of truth invested with a halo of mysticism, quackery, and verbiage. Homeopathy, the creation of Samuel Hahnemann, was in a way an anachronism, an eighteenth-century medical system projected into the nineteenth century, but it did exercise a salutary influence on medicine by combating the therapeutic excesses of the time.

Hydropathy also derived from the middle of the eighteenth century, when members of the Hahn family of physicians in Schweidnitz (Silesia) vigorously attacked the spas that had long been in use, and recommended ordinary cold water as best for bathing and drinking. They were followed by the peasant, Vinzenz Priessnitz and the pastor Kneipp, who had both been influenced by them. The former erected his much imitated "cold-water cure institute" at Grafenberg, then in Austrian Silesia. The discovery that water was good for what ailed you led to the rapid establishment of "water cures," first in Germany, then in other countries. Patients dissatisfied with regular practitioners came to Grafenberg to take the cure, and enjoyed an atmosphere which was partly akin to that of a sanitarium. The relief that they experienced when they did so, was in part psychological, and in part due to physical therapy.

The third medical heresy, mesmerism, derived from the doctrine developed by Franz Anton Mesmer at the end of the eighteenth century. During the nineteenth century there was considerable interest in mesmerism and its direct outgrowth, hypnotism, and physicians in many countries used it as a therapeutic agent. In England, the practice of mesmerism was excluded from the regular hospitals, and this made it necessary for the medical mesmerists to have their own institutions. The London Mesmeric Infirmary, to which Elizabeth Blackwell refers, was established in March 1850. Mesmerism occupies an important place in the history of medical psychology because it drew attention to the neuroses, and intruded therapy by agents other than drugs (psychotherapy) into medical practice.

Elizabeth Blackwell's approach to the problem of medical practice is based on common sense and critical judgment. (She had a personal experience of the

Priessnitz water cure, and in her autobiography gives an interesting description of it) This practical approach is also reflected in her account of the founding of the New York Infirmary for Women and Children

DEAR E,—I want to talk to you seriously about the future—that is to say, my *medical future*. It has been a heavy, perplexing subject to me on what system I should practise, for the old one appeared to me wrong, and I have even thought every heresy better, but since I have been looking into these heresies a little more closely I feel as dissatisfied with them as with the old one. We hear of such wonderful cures continually being wrought by this and the other thing, that we forget on how small a number the novelty has been exercised, and the failures are never mentioned, but on the same principle, I am convinced that if the old system were the heresy and the heresy the established custom, we should hear the same wonders related of the drugs. Neither hydropathy nor mesmerism are what their enthusiastic votaries imagine them to be. At Grafenberg I could not hear of one case of perfect cure, and unfortunately the undoubtedly great resources of cold water are not so developed and classified as to enable a young practitioner to introduce it, professedly, into his practice. Mesmerism has not converted me since watching its effects on patients. I do wish most heartily that I could discover more of the remedial agency of magnetism, for my conviction is that it ought to be powerfully beneficial in some cases, and as I find they have a magnetic dispensary here in London, I shall certainly try and attend it frequently. I am sorry that I have been unable hitherto to attend more to homeopathy, the third heresy of the present time, but I am trying now to find out opportunities. Here I have been following now with earnest attention, for a few weeks, the practice of a very large London hospital, and I find the majority of patients do get well, so I have come to this conclusion—that I must begin with a practice which is an old-established custom, which has really more expressed science than any other system, but nevertheless, as it dissatisfies me heartily, I shall commence as soon as possible building up a hospital in which I can experiment, and the very instant I feel *sure* of any improvement I shall adopt it in my practice, in spite of a whole legion of opponents. Now E, future partner, what say you—is it not the only rational course? If I were rich I would not begin private practice, but would only experiment, as, however, I am poor, I have no choice. I look forward with great interest to the time when you can aid me in these matters, for I have really no *medical friend*, all the gentlemen I meet seem separated by an invincible, invisible barrier, and the women who take up the subject partially are inferior. It will not always be so, when the novelty of the innovation is past, men and women will be valuable friends in medicine, but for a time that cannot be. I spend now about three or four hours each day in the wards, chiefly medical, diagnosing disease, watching the progress of cases, and accustoming my ear to the stethoscope. Already, in this short time, I feel that I have made progress, and detect sounds of the chest. When you go home, auscultate

all the family, you will find a variety in the sounds, though all may be healthy persons Lay a cloth over the chest and listen with the ear simply, it is as good as a stethoscope with clean people I wish I could lend you my little black stethoscope that I brought from the Maternité

I have been disappointed in one thing here—the Professor of Midwifery and the Diseases of Women and Children wrote me a very polite note, telling me that he entirely disapproved of a lady's studying medicine, and begging me to consider that his neglecting to give me aid was owing to no disrespect to me as a lady, but to his condemnation of my object

By-the-by, I must tell you of a scientific explanation of the toughness of meat which I obtained from Mr Paget's lecture the other morning, it arises from cooking meat during the *rigor mortis*! Would not that be a delicate suggestion for a squeamish individual?

Establishment of a hospital — an advanced step was made in 1857 by the renting of a house, No 64 Bleecker Street, which we fitted up for a hospital where both patients and young assistant physicians could be received This institution, under the name of "The New York Infirmary for Women and Children," was formally opened in the May of this year by a public meeting, in which the Rev Henry Ward Beecher, Dr Elder of Philadelphia, and the Rev Dr Tyng, jun, warmly supported the movement In this institution Dr Zackrzewska accepted the post of resident physician, Dr Emily becoming chiefly responsible for the surgical practice

This first attempt to establish a hospital conducted entirely by women excited much opposition At that date, although college instruction was being given to women students in some places, no hospital was anywhere available either for practical instruction or the exercise of the woman-physician's skill To supply the need had become a matter of urgent importance

Through a cloud of discouragement and distrust the little institution steadily worked its way, its few friends holding to it the more firmly for the difficulties it experienced The practice of the infirmary, both medical and surgical, was conducted entirely by women, but a board of consulting physicians, men of high standing in the profession, gave it the sanction of their names Dr Valentine Mott, Dr John Watson, Drs Willard Parker, R S KISSAM, Isaac Taylor, and George P Camman were the earliest medical friends of the infirmary

The pecuniary support of this institution, in addition to the medical responsibility involved in its conduct, was no small burden For many years its annual income rested mainly on our exertions A bazaar was held in its behalf for seven years in succession, lectures, concerts, and every other available means of collecting funds were resorted to

In 1865 the trustees of the infirmary, finding that the institution was established in public favor, applied to the Legislature for a charter conferring college powers upon it

They took this step by the strong advice of some of the leading physicians of New York, interested in the infirmary, who urged that the medical education of women should not be allowed to pass into the hands of the irresponsible persons who were at that time seeking to establish a women's college in New York. We took this step, however, with hesitation, for our own feeling was adverse to the formation of an entirely separate school for women. The first women physicians connected with the infirmary, having all been educated in the ordinary medical schools, felt very strongly the advantage of admission to the large organised system of public instruction, already existing for men, and also the benefits arising from association with men as instructors and companions in the early years of medical study. They renewed their efforts, therefore, to induce some good recognized New York school to admit, under suitable arrangements, a class of students guaranteed by the infirmary, rather than add another to the list of female colleges already existing. Finding, however, after consultation with the different New York schools, that such arrangements could not at present be made, the trustees followed the advice of their consulting staff, obtained a college charter, and opened a subscription for a college fund.

The use of a spacious lecture-room in the New York University on Washington Square, was temporarily obtained, until the house adjoining the infirmary could be leased and fitted for college purposes.

A full course of college instruction was gradually organised, with the important improvement of establishing the subject of hygiene as one of the principal professorial chairs, thus making it an equal as well as obligatory study. Another important improvement adopted was the establishment of an Examination Board, independent of the teaching staff, a plan not then customary in the United States. This Board was composed of some of the best-known members of the profession, and at the same time we changed the ordinary term of medical study from three years to four.

1822 — 1902

ADOLF KUSSMAUL

In March 1850, Adolf Kussmaul began the practice of medicine at Kandern, a small village in southern Germany. He rapidly established a heavy country practice which he carried on for several years until a severe illness (see page 340) compelled him to give it up and prepare himself for an academic career. In the country around Kandern part of his practice was among peasant mountaineers, a rugged, ignorant, superstitious lot, who did not permit autopsies. Kussmaul performed only one autopsy among these mountain folk, and his account of this event throws a revealing light on their psychology.

ONLY once did I succeed in obtaining permission to perform an autopsy in the mountain villages. It occurred under circumstances that I want to describe, as they are characteristic of the place and the people. The village carpenter of Vogelbach reported to me personally that his wife had died. I had attended her only once. A febrile illness had carried her off in a few days and I was greatly interested in checking by means of an autopsy the correctness of my diagnosis—typhoid fever. The carpenter had traveled in foreign parts while a young man and was therefore less prejudiced than the other inhabitants of Vogelbach, but all arguments were in vain. In vain I served him with good wine, praised his knowledge of the world and his great intelligence, yet he remained unmoved by my exhortations until I finally discovered his weak spot. I promised him to remit the fee for my visit, whereupon he agreed. The next morning I rode up to his village. As I approached his house, two grown-up daughters who had lain in wait for me, raised a clamor, for stupidly he had told them about our agreement. He himself had become somewhat hesitant, but in the end he kept his word and led me into the house. In the living room sat an old man from the Black Forest, a wandering tinder pedlar, with a small glass of whiskey. The daughters had told him what had brought me there, and indignantly he cried out to the carpenter: "Hey, carpenter, by God, surely you won't let your wife be cut open? You shouldn't hurt the blessed dead!" But the carpenter remained firm. We went into the next room, where my diagnosis was shown to be correct. As I came out again with the carpenter and was leaving the house, the old tinder pedlar shouted venomously after us: "Carpenter, your doctor is a youngster, he wants to learn on your wife, the old doctors don't have to cut people open!" With this parting shot he rode home.

1839 — 1925

BERNHARD NAUNYN

Medicine, as much as mathematics, is a study of problems, and the same acuteness is required for every day problems at the bedside as for the solution of more abstract puzzles. It is from these sources that the doctor, no matter what his eminence, learns a great deal. The experience of his own life is broadened and enriched when he comes into contact with people in spheres of life other than his own. That this happens even under apparently adverse conditions is shown by Naunyn's experiences as a consultant. Similarly, his experiences at Strassburg as the successor of Kussmaul illustrate equally well how one can profit from another's errors of omission or commission.

IN THE practice of the internist, consultation trips play a large rôle. I did not have to travel so much in the province itself, as there were only few well-to-do people in the provincial cities in East Prussia. Memel, where wealthy

shipowners and timber-merchants had been at home, was in a state of decay, and there was no other wealthy city. At this time West Prussia was fighting for separation from East Prussia and elevation to the status of an independent province, and intentionally avoided any relations with Königsberg. The professors from Königsberg were not very popular there. Julius Jacobson, the ophthalmologist, had a large consulting practice for internal diseases among the large landowners of East Prussia. I never envied him, almost every day he was under way, and he wore himself out as a result of the incompatibility of such a practice with his duties as a university teacher. I soon developed a considerable consulting practice in Russia. My journeys brought me close to Warsaw, Moscow, and Petersburg, even though I was never called to the cities themselves. These consultation trips to Russia, which by the way were the only form of practical activity in which I engaged, were adequately recompensed, at least for that period, but they became too much for me. It was very fatiguing to go directly from clinical work to the train, then to spend several days and nights en route in a railway compartment, on wagons, and sleighs, and then to return directly from the train to my daily work. These long journeys were made even more burdensome, however, by the agitation and disturbance which they brought with them, so that after hardly eight years I began very often to refuse to undertake them. My friend and student, Schreiber, obligingly substituted for me. As he was very capable, the result was that in him I created a serious competitor—a circumstance, however, which was not in the least prejudicial to our friendship.

I have already mentioned the Russian preference for mass consultations. When I came to a patient, I generally found a large number of physicians already there. Each of these and perhaps a few more, who came later, wished to consult me. Occasionally, this led to the formation of a procession. A retinue soon appeared, which followed wherever I went. I preceded them with my carriage, my retinue followed behind me in cabs. Once in a very small town the entire procession went on foot. Behind me was a large troop of all kinds of sick and crippled people. Cripples and blind persons accompanied me for hours and entreated me to cure them. But how many were there, and how few could I help! Among these was a Jewish woman who dragged around with her a go-cart containing a man with a very old paralysis of the legs which were already contracted and crippled. There was nothing that I could do, but she did not budge from my side, and did not cease her entreaties for my help. "Just touch him, perhaps the Lord will send help through you!"

Another time, it was in Białystok, I returned from such work to my hotel at midnight. In front of my door there was still a crowd of patients, but I was exhausted and did not want to see anyone else. Among those who waited for me, I noticed a mother with a child on her arm. The next morning at half past four I left my room ready to start my journey, there on the threshold the woman sat again with her child on her lap and entreated me with the same

words as on the preceding evening. She had spent the entire night there. I can only hope that my advice helped the child.

Through these consultations I also became acquainted with Russian unpunctuality. The confusion of such a day often made it impossible for me to be punctual. Gradually, I learned that in Russia no one expected it. When I started out to such a "consultation" an hour or more after the appointed time, it no longer perturbed me, and if even then a colleague interrupted to drag me off to an "especially important case" I bore this too with resignation. Everyone did the same, one let the other wait, or waited oneself, just as the case might be, and in the end—this is the incredible part—one managed even with this unpunctuality. Even the train seemed to me to wait, at least I never arrived too late.

My consultation trips in Russia led me into rather aristocratic houses, almost all of them landowners. Here, with but few exceptions, there prevailed that unusual mixture of luxury and lack of culture. In one of the best of these homes I was splendidly received and entertained. Every evening there was a very good, well-served dinner. But when I looked for the bell-rope, in the morning, there was none, and when I had myself shown to the toilet I found it in an unbelievable condition. Only later did I learn that the servant sits in front of the door once for all and that one does not go to the toilet, but has the apparatus brought to one's room.

Another time, during the winter, I arrived in a small Russian town after a twenty-four-hour trip. Evening came on. In the houses the lights were just being lit. From every house around the great, white market-place the brightness of lights streamed through the windows as it does among us on Christmas Eve. It was Friday evening, the beginning of the Sabbath. The patient was a girl with advanced tuberculosis in a completely neglected condition. I did my best, but then when I sat down with the patient's father I was depressed and taciturn. After a while he began: "May I tell the Professor something? I am an old man and have experienced much, and it hurts me to see the Professor depressed, because I know what is bothering him." "Well, tell me then." "The Professor came and he had a long trip. Now he found the patient in a bad state, and he took the time and trouble, and so he is dissatisfied because he cannot help." The man was right, and so I began to listen attentively to him. "The Professor is still young (I was 37 years old), so I may tell him something which is the truth. If my daughter is sick and there is nothing more to be done for her, then I complain to the Lord, but the Professor should not question his art on that account. Human life is a very precious thing, and if you can save it and can help in one case out of ten, even one out of twenty, it is a great thing, and greatly to be praised is the physician who can do this." How often has this remark of old Epstein consoled me. What he said is indeed a commonplace—yet I have often thanked him for it.

On April 8, 1888, the two of us, my wife and I, arrived in Strassburg punctually and in good health. On the morning of the same day Kussmaul had

moved to Heidelberg Like Leyden before him, he had inhabited a house at Elizabethstrasse 7, which belonged to the university and which I also reserved for myself by stipulation upon my appointment It was a miserable street, but a grand, magnificent house "One can speak of it as a small *château*," Kussmaul had said, when he showed me around in it, "*entre cour et jardin*" In front was a magnificent court with beautiful sycamores and a large catalpa In the back there was formerly an extensive garden, but which for the most part had been given up for the building of various university institutes A large garden terrace covered with tendrils of ivy and wistaria was still present The house had been built during the French period by a rich capitalist The otologist, Abraham Kuhn, who was well acquainted with the history of old Strassburg, asserted that the former owner had dealt with slaves in Algiers, and that the spirits of these poor people whom he had on his conscience used to wander about the large terrace

I don't want to say anything of the condition in which we found the house It was good that we had a week's time to make it livable Only now, after considerable delay, our wagons appeared, the one having come by way of Koln, the other by way of Munchen They had stood in water for days, and the state of the contents may be imagined My wife, who never lost either her head or her courage, went valiantly to work, and after 14 days we gayly moved in

In the meantime I tried to make myself at home in the clinic There I found a great deal to do The Strassburg clinics as a whole did not correspond to my exaggerated expectations, but upon closer scrutiny my clinic proved to be unbelievably backward It occupied almost the entire first floor in the main building of the old city hospital The rooms were large and high, and contained on the average about 30 beds There were practically no auxiliary rooms For the entire section of 135 beds there was no bathroom, no isolation room, not to mention day-rooms The toilets were simply seats over the shafts that led to the sewage pit, and were located in unheated structures built onto the wards The odors from the sewers penetrated easily into the room According to the French custom there was no separation of the patients on the ward, there was an isolation pavilion only for smallpox cases while cases of typhoid, measles, scarlet fever, and erysipelas were scattered among the other patients It was said that infections had not occurred, but during my first winter two patients contracted scarlet fever, of whom one died As I later discovered, ten to twenty typhoid infections occurred annually among the inmates of the hospital I won't even venture to speak of the transmission of erysipelas for it was so common that I hardly dared to tap a patient with dropsy My first concern was with the isolation rooms and the bathroom I achieved this goal rather quickly, the friendly, good-natured old director of the hospital, Gervai, did his best, even though my "far-reaching" demands came to him rather as a surprise Finally, long before the completion of my new clinic, I even achieved the establishment of a separate typhoid section, with the result that

all at once the typhoid infections in the hospital ceased almost completely

The clinic had four assistants. Their salaries were strikingly low. Only the senior received the normal salary of 1500 marks, the others received less, down to 750 marks. Only the senior assistant had quarters in the hospital, and consequently was overburdened with work. He was on duty at night and also during the day when the ward rounds were over and the other assistants had gone. In addition, I found still another very inconvenient custom. Kussmaul liked to have the patients, who had been treated at the clinic, remain under its care even after they were discharged. They came whenever they wished. While I was making rounds the assistant would be called away to take care of such an impatient patient. There was no separate room for their treatment, so that it took place in the wards or in the auditorium. I had to remedy this situation immediately by establishing a dispensary and appointing another assistant.

The entire management of the wards was not in accord with my views. It was almost intolerable that my wards, which lay one behind the other in a row, should serve as a passageway for the patients of several other departments and for the Catholic nursing sisters when they went to church which they did continuously from five in the morning to seven in the evening. As there was no bathroom, all bathing had to be done on the wards, a circumstance which created noise and disturbance, so that as few baths as possible were given. To carry out thoroughgoing hydrotherapeutic measures for the rather numerous cases of typhoid fever was no small achievement. Cleanliness in other matters was likewise not customary. The floors were never wiped wet. Every two weeks they were waxed and at other times they were swept dry, so that the dust flew around. Cleanliness was not taken seriously. When I found fault with the fact that the bed linen and shirt of a patient were soiled with his excretions, the nurse replied, "But Professor, (it was a typhoid patient) the patient received clean linen this morning." And my order that the patient receive clean linen as often as the bed clothes were strongly soiled, if need be even ten times a day, was received at first with a smile of incredibility by the good Sister Apollonia, and with strong resistance by the nurse in charge of the linen. The illumination of the wards was more than defective, rounds were made by the light of an oil lamp. I was always in a state of fear because of the danger of fire.

I had a separate auditorium which was tolerably large and light enough in summer. The patients had to be brought there through a long, dark corridor. Those who were bedridden were brought over on a stretcher. In the auditorium these patients were placed on a stand which was so high and narrow that the patient was in danger. The first time that I presented a patient who was somewhat comatose, I had to protect and support him during the entire presentation, so that he would not fall down from his narrow bed. Until this matter was properly settled, I lectured in the wards.

In winter the auditorium exhibited its worst side. Heat was provided by an old iron stove. The student who was called up to assist in the demonstra-

tion stood right next to this hot stove. Students fainted repeatedly because of the heat, and I too suffered considerably because of it. The lighting facilities, which consisted of several "fish-tail burners," such as are now used only in stables, were entirely inadequate. And only half the auditorium was equipped with even this defective illumination. On the first occasion when I needed illumination I found that the other side had none at all. The laboratory consisted of two small rooms, the laboratory attendant was a seventy-year-old pensioner of the hospital, who suffered from a severe asthma. His main accomplishment was that in the morning he started a good fire in the stoves so as to be able to sit behind one of them the rest of the day. Here again is a proof that even in the most miserable holes good work can be produced, for under Kussmaul excellent investigations had been carried out here, I need only mention v d Velden, v Mehring and Cahn. Nevertheless, now something more was needed, a new laboratory had to be created. The hospital itself had no room for a laboratory, and so I had to be satisfied with the establishment of the clinical laboratory in a house on Elisabethgasse 6 (right near my residence), which was about six minutes from the clinic. The house belonged to the university, and was available, except that in large part it had been requisitioned by the neighboring Deaconess' House. At first I had enough room on the ground floor, but soon I was to be compelled to increase my demands very considerably and in a very unexpected direction.

During the first semester I had already become aware that no provision had been made in Strassburg for bacteriology. Occasionally a course in bacteriology was given by the assistant of the Pathological, or of the Physiological Chemistry Institutes, which also dealt with hygiene as a minor interest. Frequently, however, even this was absent, and there was absolutely no place for bacteriological investigations. As far as possible, Recklinghausen and Hoppe-Seyler, the directors of the two institutes mentioned above, kept aloof from bacteriology. Something had to be done immediately to satisfy this crying need, and as no one else felt any obligation in this respect, I had to take the matter in hand. I urged my clinical assistant, Ernst Levy, who had been well trained bacteriologically under Pasteur, to give a bacteriological course. E. Levy qualified as a university lecturer, and, until the creation of a professorship for hygiene and Forster's appointment (about 1896), he taught bacteriology in my laboratory. The rooms were obtained only after several conflicts with the Deaconesses.

1843 — 1926

OTTO HEUBNER

In the nineteenth century, diphtheria became widespread throughout the world, and during the latter part of the century appeared in particularly virulent forms. Until near the close of the century little, if any, real advance was made in the

treatment of the disease. In 1883 Klebs identified its microbic cause, a bacillus, and in 1884, Loeffler proved its causal relation to diphtheria.

The month of December 1890 was made memorable in the history of diphtheria by the announcements of Behring and Kitasato, and of Fraenkel, of the discovery of a method of immunizing animals, of an antitoxic serum against tetanus (lockjaw), and of a similar serum against diphtheria. The first patient to be treated with diphtheria antitoxin was a child in von Bergmann's clinic in Berlin. The serum was administered on Christmas Day, 1891. Serotherapy was not generally adopted, however, until Roux, in September 1894, presented his classic paper on this subject at the Eighth International Congress of Hygiene and Demography at Budapest.

Heubner's description of these events, and of the part which he himself played in helping to bring about the adoption of diphtheria antitoxin, is therefore of considerable interest, as well as a valuable historical document.

DURING the first years of my activity as director of the new children's hospital, it was diphtheria more than anything else that caused my greatest worries and headaches. The frightfulness of this disease had not impressed me so vividly or so overwhelmingly while I had worked in the dispensary. Even though the winters of 1891-92 and 1892-93 were not characterized by a particularly marked increase of the disease in Leipzig, yet our young institution received almost uninterruptedly the severest cases with hopeless prognoses. The little patients with severe croup symptoms arrived in the morning, in the afternoon a tracheotomy was performed, or later, after the assistant physicians had acquired the necessary dexterity, intubation, and in the evening they were dead. This tragedy was repeated several times each week during the winter months. All the available remedies including the vapor room in the new diphtheria pavilion were tried in vain. The doctors and the nurses were hardly able to stand it any longer. I tried all the known remedies and methods—but it was just like running one's head against a thick wall. Then in the summer of 1892 there came into my hands Behring's first, short communication, *Blood Serum Therapy I* ("Blutserumtherapie I"). Naturally I was acquainted with the preceding studies of Behring and Kitasato on immune substances obtained from animals infected with tetanus and diphtheria. In this brochure, however, there was mentioned for the first time the application of the new knowledge obtained in the laboratory to the practical treatment of sick people. The precise, scientific, novel tone of the brochure immediately won my trust. I wrote to Behring and immediately received a friendly reply stating that except for Henoch, I would be the first in Berlin who would be permitted to carry out tests with the new remedy. From this time dates my connection with Behring, which I maintained with this scientist, who rose rapidly to world-fame, throughout my entire period of activity as a practising clinician, just twenty years. During the year and a half that I worked in Leipzig, I received from time to time larger or smaller quantities of the antitoxic serum prepared by Behring himself and later by the Höchst Dye Works which had entered

into a contract with him. At first it was obtained from dogs and later from sheep, and possessed only slight potency, so that we generally had to inject the sick children with forty to fifty cubic centimeters. Thus the results obtained were not yet decisive, even though I personally was already under the impression that there was definitely something to the treatment. Consequently, my report on my experiences presented at the Congress in Rome in the spring of 1894, was still very reserved, which Behring took very much amiss, so that after my transfer to Berlin it was necessary for me to make him change his opinion by personal contact. After that, however, my association with him, one of the most interesting persons whom I have met during my life, became a very active one, and as long as Behring was in Berlin it remained uninterrupted. He had a splendid analytical mind, whose bold ideas were controlled by strict mathematical views. Of medium height and soldierly bearing (when we first became acquainted he was still a captain in the medical corps), the reddish-blond man, immediately, at one's first meeting with him, gave an impression of being an independent investigator. His light eyes with a penetrating, at times rather piercing look, assumed an extremely dominating expression during the discussion which immediately developed in the course of conversation. His entire mode of thought was completely outside any orthodox opinion or tradition, a fact which he liked to emphasize. At the same time he was not opposed to criticisms, but met them with serious consideration, it was a rare pleasure for me to be overwhelmed with masses of ideas from such an original scientific genius, ideas that opened up entirely new points of view for me. His manners always remained those of a gentleman, although he did not come from an especially high social level. He was the son of a teacher. What a contrast between this highly gifted personality and many another equally gifted individual who has not learned *savoir vivre*!

The congress met at the beginning of September. The chief problem was the treatment of diphtheria. Various jealous influences had already made themselves felt in opposition to Behring's discovery. After a few introductory remarks by the Minister of Education Hieronymy, the session was opened by an opponent whose objections met with approval, but now a general demand for Behring was raised. As he had, so to say, commissioned me to represent our cause, because he himself could not appear, due to illness, I presented my card and was immediately given the floor. I still refrained from too strong a support of the clinical value of the new discovery and restricted myself chiefly to describing the method of application at the bedside. Then, however, came Roux, who with great eloquence, on the basis of about 250 cases, insisted on the high therapeutic value of the serum and was accorded general applause. The case for the specific treatment of diphtheria had been won.

In December, I was invited by the executive committee of the Congress for Internal Medicine to make the chief address at the congress to be held in Munchen in the spring of 1895 on the subject "Success of the Therapeutic

Serum Treatment of Diphtheria " I accepted, and throughout the winter I was diligently occupied with the compilation of the cases from my clinic and from the Koch Institute. The expanded lecture appeared in May as a monographic brochure containing all the supporting evidence. I supported the value of the new remedy, but with caution. At the dinner I sat next to the great chemist Beyer, who told me that this discovery of Behring's had already caused him many a sleepless night, in view of the undoubted effectiveness of a remedy which is so completely inaccessible chemically. At any rate, the result was that the way for the introduction of the serum into practice was cleared. Both Widerhofer, as well as Baginsky supported my advocacy of the remedy, and with even greater energy. To be sure, numerous battles were still to be fought with opponents of the method, our cause suffered a severe blow through the death of the child of the pathological anatomist Langerhans (the grandchild of the chairman of the Berlin municipal council) immediately after an immunizing serum injection. It is now known that this was one of the very rare cases of congenital anaphylaxis to the serum (not to the antitoxin). This setback was overcome, however, and the serum treatment did not disappear from medical practice. Hundreds of cases in private practice convinced every doctor who once used it, not to give up this therapeutic method.

1 8 6 7 —

VIKENTY VERESSAYEV

The emotions of Veressayev on starting to practice medicine are strikingly similar to those of Marion Sims (see page 172). In his morbidly introspective analysis, however, Veressayev is more like a character from some pre-revolutionary Russian novel. But he does emphasize a point which is of exceeding importance for medical practice—that the doctor's business begins and ends with the patient. It is the patient who requires treatment, not the disease.

OUR final examinations terminated, we assembled in the University hall to sign our oaths and receive our diplomas. The latter were embellished with the Imperial arms and the great University seal, and bore witness to our having successfully passed our tests, both practical and theoretical, the Faculty of Medicine declaring us worthy of the degree of Surgeon, "with all the rights and privileges appertaining to that calling according to the law."

I bade good-bye to our Alma Mater in a depressed and unhappy frame of mind. The vague misgivings which had begun to assail me as my university career drew to its close, at last assumed definite shape and confronted me in all their nakedness. I whose entire mental stock consisted of a chaotic accumulation of fragmentary, undigested, and unassimilated information, I, who had hitherto only looked on and listened to others and never acted inde-

pendently, who was ignorant of the most elementary practical knowledge—had suddenly attained the dignity of physician and patients might apply to me at any moment! In the name of goodness, what could I do for them?

I took up my residence in a small governmental town of middle Russia I arrived upon the scene at a particularly propitious moment, a short time previously the doctor, who lived on the outskirts of the township, and had worked up a fair practice, died I took lodgings in the same district, put up my brass plate with the legend “Dr —,” and began to wait for patients

I awaited them, and at the same time I dreaded their advent Every pull at the bell made my heart beat in a panic, each time that it turned out that no patient had called, I sighed with a feeling of relief Would I be able to diagnose, would I be capable of prescribing the right treatment? My store of information was neither so large, nor was I so well at home in what I possessed, to feel certain of being able to apply it *impromptu* All well and good if the patient's case was not too urgent, and he could be allowed to wait after prescribing something neutral, I would look up my text-books at home and ascertain the right thing to be done But what if I were called to an emergency case? It is just this sort of case that beginners are generally summoned to What would I do then?

There is a book by a certain Dr L Blau, called “Diagnosis and Therapeutics in Cases Showing Alarming Symptoms” I got it and transcribed its main contents into my pocket memoranda, supplementing this conspectus from my text-books I grouped the different diseases in accordance with their symptoms for instance, *dyspnoea* (1) croup, (2) pseudo-croup, (3) oedema of the glottis, (4) spasm of the larynx, (5) bronchial asthma, (6) congestion of the lungs, (7) croupous pneumonia, (8) uremic asthma, (9) pleurisy, (10) pneumothorax Each disease in turn was accompanied by an enumeration of its symptoms and the corresponding treatment This note-book did me yeoman service and I could not dispense with it for a long time afterwards—about two years When summoned to the bedside of a patient, I would unclasp my trusty friend under the pretext of taking notes, seek out the disease most resembling the patient's and prescribe accordingly

I was the only medical man in the part of the town where I lived, and little by little the patients began to arrive I soon worked up a practice amongst the local townspeople which could be considered very fair for a beginner

Generally speaking, there was little to cheer me in my practice at large I was chronically in a terribly nervous state Although, goodness knows, I had appraised my medical knowledge at a very humble figure, when it came to the point I found that even my modest estimation had been too high I was on the verge of giving up in despair, for nearly every case disclosed to me more and more plainly all the depth of my ignorance, my utter unprepared-

ness and incompetence My abstract bookish wisdom, which had not stood the test of experience, prepared constant pitfalls Actual life could not adapt itself to the stiff and unpliable moulds furnished by my erudition which, on the other hand, I was incapable of rendering more elastic So often did I err in my diagnoses and prognostications, that I was ashamed to look my patients in the face When asked whether the medicine prescribed would be palatable, I was unable to answer, it generally happened that I had never set eyes on it before, much less tasted it The bare idea of being summoned to a complicated case of child-birth threw me into a cold sweat, while at the university, I had only assisted at five confinements, and the only thing I knew well in midwifery was the great danger arising from unskilled assistance

To me the life and the soul of the patient were a closed book, we used to visit the clinical wards in the guise of "young gentlemen," passing ten or fifteen minutes at the bedside of each patient, we barely had time to give their *diseases* the necessary attention, as for the suffering *man*, he remained an entirely unknown quantity

But why should I dwell upon such subtleties as the psychology of the patient? The simplest things constantly found me wanting It was mortifying to discover that I lacked that knowledge and address which every nurse possesses When ordering an enema or poultice, I was in constant fear of being asked how they should be applied As students, we were never instructed in such "trivial" details, that was the hospital attendant's or the nurse's work, the doctor merely issuing his orders Having neither hospital attendants nor nurses to do my bidding now, I was compelled to give instructions personally to those who asked for them The larger and more "serious" text-books had to be laid aside, their place was taken by such works as "Nursing," by Billroth, a primer written for Sisters of Mercy And I, who had artistically amputated a corpse's knee according to Sabaneeff's method, when passing my final examinations, now conscientiously studied the methods of lifting a weak patient up in bed and the technique of blistering

1 8 6 3 —

J. M. T. FINNEY

Born the son of a Presbyterian clergyman on a plantation near Natchez, Mississippi, while the country was in the throes of civil war, John Finney was educated at Princeton, and received his medical degree from Harvard in 1887 After interning at the Massachusetts General Hospital, he joined the staff of the Johns Hopkins Hospital in 1889, in the early days of its organization, and grew with that internationally famous medical center In his autobiography, Dr Finney describes his long and eventful career, and his fly-paper memory for details—particularly of persons and incidents—adds greatly to its historical value His chapter, "The Business of Being a Surgeon," is a remarkably accurate picture of the social and

professional atmosphere of surgery after the turn of the century, an environment which in many important particulars has now disappeared

Dr Finney served with the Army during the First World War, and then returned to practice surgery in Baltimore. During this period he had his share of the variety of experience which comes to a surgeon. Contact with all kinds and conditions of men enable him to tell many a good story, as witness his addition to the legend of Calvin Coolidge.

THE majority of emergency operations done in those days in private homes were for acute infection, usually appendicitis, but as this case illustrates, there were all kinds of exceptions. When one was called to go out into the country or to another city, it was always well to go prepared for almost anything, as one rarely knew just what one would find upon arrival. Many are the interesting experiences of one kind or another that I have had. I was not infrequently called upon to operate in out-of-the-way places in the different counties of Maryland, and even to cross the Mason and Dixon Line into the neighboring counties of Pennsylvania. Of course, it was all country, or at most small-town practice, and as usual the conditions under which the operations were done were very primitive. However, it was surprising the excellent results we used to get. Looking back over the character of the operations that we had to do and the circumstances under which they were done, I am amazed at what we were able to accomplish. The Pennsylvania Dutch stock was very sturdy and could endure a good deal, a fact that stood the doctor, as well as the patient, in good stead.

I was once sent for by a doctor friend of mine to see a case with a diagnosis of acute appendicitis. I went with my operating trunk prepared to operate. When I got there and examined the patient, I felt inclined to a similar diagnosis, but with some mental reservations. On paper it sounded like a fairly typical acute appendix, but when you examined the patient, a young girl of about seventeen or eighteen, one or two of the more characteristic signs of acute appendicitis were absent. Yet every surgeon knows that the really typical case of any disease is almost the exception rather than the rule. Since the girl was evidently ill, had a high temperature, rapid pulse, pain and tenderness in the abdomen, something clearly was wrong, but what was it? I told the doctor frankly that I had a question in my mind as to whether or not it was an appendix, since the clinical picture that she presented was not typical, but here she was up in the country, a long way from surgical help, and I had to go back that afternoon. I said that were she a member of my own family, with conditions as uncertain as they were, I should rather have the operation than go off and leave her as she was. The operation seemed to me the less of two evils. The matter was stated frankly to the parents, who were sensible people, and they said to go ahead and operate if I thought best, so I did.

When I exposed the appendix, it was slightly injected and swollen, but I could see at once that that wasn't what was causing the trouble, but since I

should thank anyone for taking out my own appendix if he ever got his hands on it, I applied the same principle to her and removed it. I made as thorough an examination of the abdominal organs as I could through my incision, but could find nothing to explain her trouble, and closed the wound. She stood the operation very well, and I told the parents frankly that the appendix was not the cause of her trouble and that I could not satisfy myself as to just what was, but that it would probably develop in the course of the next day or two. Frankly, the possibility of the real nature of the trouble did not occur to me, as this was my first experience with the simulation of appendicitis by a contagious disease. Hence the question of her exposure to any contagious disease was not raised. When I left, I asked the doctor to send me a telegram collect when he had found out the real trouble.

About thirty-six hours afterward, I received a laconic wire from him, one word, "Measles." Well, that was a new one on me. I knew that certain other acute infectious conditions may give rise in their early stages to abdominal symptoms very difficult to distinguish from an acute attack of appendicitis, but at that time I did not know that measles could do the same thing. As the girl went through her attack of measles all right, and it did not affect the healing of the appendix wound, everybody was satisfied.

Not two weeks afterward, I was called to see another case, this time a boy with almost identical history and symptoms as the case just reported. The clinical picture that he presented was suggestive, but not typical, of acute appendicitis. Then, too, the sister of the boy was ill upstairs with measles. With my recent experience I felt that this case was not an appendix, so I told the parents that I didn't believe that it was, related my recent experience with measles and stated that under the circumstances I preferred to wait a little longer. "Koplik's Spots" as a diagnostic sign for measles had not as yet been described. The next morning when I went to see him, I found him broken out with a typical measles rash from head to foot. I must say that I felt a little "chesty" over that experience, and thereafter I have made it an invariable practice to examine and question my supposed appendix cases with the idea in mind of possible measles.

It was not long after this second experience that I was called one evening by a doctor friend of mine, one of the best medical men whom I know, to see a boy, the son of another doctor, a friend of ours, who had symptoms strongly suggesting appendicitis. I happened to have told this doctor friend of my recent experiences with measles. Strangely enough, it happened that the sister of the boy in question was at that time sick in the house with measles. Knowing this fact and bearing in mind my recent experience with measles, we questioned whether this might not be another instance of the same sort, since the boy presented a rather typical picture of appendicitis. It is traditional among surgeons that rare cases are apt to come by twos and even threes. We examined him carefully and were possibly overinfluenced by my recent experiences and by the fact that this presented something that I have never seen

in a case of acute appendicitis before or since, namely, his insistence on the nurse's rubbing his abdomen vigorously over the region of the inflamed appendix. Usually patients with acute appendicitis won't let you touch that area. Since the boy lived not far from our respective residences and since he did not appear to be very ill, we decided to let him go until the morning. However, about one o'clock that night I was called to come at once to see the boy in consultation with the doctor. It was recognized immediately that the appendix had perforated. We hustled the boy into the hospital right away and removed a gangrenous perforated appendix before daylight. He made a prompt and satisfactory recovery.

Both of us felt a bit humiliated that, overinfluenced by my experience with the preceding two cases and by the atypical clinical picture, we had failed to recognize a case of acute appendicitis until after it had ruptured. Hippocrates, the Father of Medicine, in one of his aphorisms, makes the unequivocal statement that "experience is fallacious and judgment difficult." Any doctor who has been in practice for a few years will bear willing testimony to the truthfulness of this statement.

I can still bear further witness to President Coolidge's taciturnity. Once, while he was President, I was called to Washington to see a member of his Cabinet who was critically ill in one of the local hospitals. I went over as soon as possible and saw him in consultation with his doctor. It was evident upon examination that he was "in extremis" and entirely beyond all human aid. Very little, therefore, could be done in his behalf, nothing that was not already being done. While at the hospital, I received a message from the White House, stating that after I had seen the Secretary, the President would like to see me at the White House.

I reported as soon as I could and was ushered into Mr. Coolidge's room, where he was seated, writing at a small table in front of a window. He was using a small piece of pencil about two or three inches long. There was another chair at the table besides the one the President was using. When I was ushered into the room, he arose, turned and put out his hand, and as we shook hands, motioned with his left hand to the empty chair. I waited until he was seated and then sat down. Up to this time not a word had been spoken by the President. He sat there twirling the little piece of pencil in his fingers and looking out of the window without paying the slightest attention to me for what seemed an interminable time. It finally became embarrassing. I did not know whether or not to open the conversation. It seemed to me that since I had been sent for, it was to be expected that he would state what he had in mind, but there we sat, how long I don't know.

Finally, I could stand it no longer. I felt that at least I wanted it definitely understood by him that I had not come of my own volition, but in response to a request from him. So I said, "Mr. President, while visiting the Secretary at the hospital just now, I received a message that you wished to speak to me at

the White House " He nodded assent Then we waited again, and we waited, and we waited

Eventually it became so embarrassing that I spoke up again and said, "I suppose, Mr President, you wish my report of the findings in the case of the Secretary " Again he nodded his head I made my report, which was very brief and, as I have indicated, most unfavorable I added that I could only express the hope that I might be mistaken I was not, and the afternoon news papers announced the Secretary's death before I got out of Washington Again we waited No question was asked and none appeared to be forthcoming Finally, I got up and again remarked that I was sorry to be the bearer of such bad news

Then the President rose, and still looking out of the window, he said, "You were sent for some time ago when my boy was sick "

I replied, "Yes, Mr President, I received your message, relayed to me up in Nova Scotia, where I was spending my vacation at the time I replied at once that I was too far away to be of any immediate service and suggested your calling another consultant, adding that I would hold myself in readiness to come at a moment's notice if later my services were needed " Again he nodded, and there we stood I did not know whether or not he might wish to add anything else After waiting what seemed to me a very long time, I turned and said, "I am very sorry indeed, Mr President, that I could not be of service to your son at the time of his illness I shall bid you good day, sir " He bowed, and I bowed and retired I could not but feel that perhaps my presence had brought so forcibly to his mind the great loss that he had sustained in the untimely death of his son from an infected wound of the foot that his New England repression had overcome his ability to speak It was one of the most embarrassing experiences of my professional life

1870 — 1946

ARTHUR E HERTZLER

Born in Iowa in 1870, Dr Hertzler received his pre-medical education at Southwestern College in Kansas After obtaining his M D degree from Northwestern University in 1894, he went abroad for several years and took two years of graduate work in Berlin (1899-1901) In 1902 he received his Ph D from Illinois Wesleyan University From 1909 on, Dr Hertzler was professor of surgery at the University of Kansas Since 1894, he conducted research in diseases of the peritoneum, and made important discoveries concerning local anesthesia and diseases of the thyroid gland Dr Hertzler was widely known for his autobiography, *The Horse and Buggy Doctor*.

THE usual procedure for a doctor when he reached the patient's house was to greet the grandmother and aunts effusively and pat all the kids on the head before approaching the bedside. He greeted the patient with a grave look and a pleasant joke. He felt the pulse and inspected the tongue, and asked where it hurt. This done, he was ready to deliver an opinion and prescribe his pet remedy. More modern men had a thermometer and a stethoscope. The temperature was gravely measured, and the chest listened to—or at

That ritual was followed by every experienced physician. I had ideas of my own. I passed the aged female relatives up, ignored the children and proceeded with the matter at hand. This was not based on bravery on my part, but ignorance. I had not yet learned that most of the things one needs to know in the practice of the art of healing never get into the books. But there were compensating factors. I at least examined my patients as well as I knew how. My puerile attempts at physical examination impressed my patients and annoyed my competitors, which, of course, I accepted as a two-time strike. Word went out that the young doctor “ain’t very civil but he is thorough.” Only yesterday one of my old patients recalled that when I came to see her young son I “stripped him all off and examined him all over.” Members of that family have been my patients for the intervening forty years, so impressed were they. Incidentally, it may be mentioned that in this case I discovered a pleurisy with effusion which had not been apparent to my tongue-inspecting colleague.

The great majority of the country doctor's calls were for trivial and obvious conditions, such as sore throat with or without involvement of the tonsils, recognizable at a glance. Grandmother might have a renewal of her attacks of bronchitis or asthma, or Father might have lumbago or rheumatiz. These conditions could sometimes be diagnosed while one was driving into the yard. Simple remedies sufficed and one came a day or two later to see how the patient was progressing.

If there was an injury involving the skin one sewed it up without ceremony. The patient was supposed to submit to this without a squawk. If the kids received the injury while up to devilment they stood it heroically, but if they received it in line of duty they did not fancy, there were likely to be loud lamentations. But the ordeal was brief. In case of fracture one went out in the barnyard and hunted himself a suitable board, a loose one if he could find it—otherwise he forcibly removed one from its moorings. From these he fashioned a splint, perhaps with the aid of a bed sheet, if there was such a thing in the house. X-rays were unknown but the results obtained by the country doctor of experience were surprisingly good. At least none died as now sometimes happens when fractures are operated on. Legs, it may be mentioned, in those days were regarded as things to be used, not to look at. Therefore, if a useful limb resulted, everybody was satisfied, even though the result was not a thing of beauty.

1856 — 1939

SIGMUND FREUD

In 1909, when Sigmund Freud delivered his lectures on psychoanalysis at Clark University, he declared that it was Josef Breuer, not he, who had brought psychoanalysis into existence. This statement referred to the fact that it was Breuer who had first developed the "cathartic procedure," by which patients with hysterical symptoms were caused to recall and reproduce under hypnosis the forgotten experiences upon which these symptoms depended. Later, Freud rejected the hypnotic technique and introduced in its place the method of free association. Differences of opinion regarding the sexual aetiology of the neuroses led Breuer and Freud to separate, and the latter continued on his way to build up the theory and practice of psychoanalysis. Freud's account of these early developments is a document of historical importance.

WHILE I was still working in Brucke's laboratory I had made the acquaintance of Dr. Josef Breuer, who was one of the most respected family physicians in Vienna, but who also had a scientific past, since he had produced several works of permanent value on the physiology of breathing and on the organ of equilibrium. He was a man of striking intelligence and fourteen years older than myself. Our relations soon became more intimate and he became my friend and helper in my difficult circumstances. We grew accustomed to share all our scientific interests with each other. In this relationship the gain was naturally mine. The development of psychoanalysis afterwards cost me his friendship. It was not easy for me to pay such a price, but I could not escape it.

Even before I went to Paris, Breuer had told me about a case of hysteria which, between 1880 and 1882, he had treated in a peculiar manner which had allowed him to penetrate deeply into the causation and significance of hysterical symptoms. This was at a time, therefore, when Janet's works still belonged to the future. He repeatedly read me pieces of the case history, and I had an impression that it accomplished more towards an understanding of neuroses than any previous observation. I determined to inform Charcot of these discoveries when I reached Paris, and I actually did so. But the great man showed no interest in my first outline of the subject, so that I never resorted to it and allowed it to pass from my mind.

When I was back in Vienna I turned once more to Breuer's observation and made him tell me more about it. The patient had been a young girl of unusual education and gifts, who had fallen ill while she was nursing her father, of whom she was devotedly fond. When Breuer took over the case it presented a variegated picture of paralyses and contractures, inhibitions and states of mental confusion. A chance observation showed her physician that she could be relieved of these clouded states of consciousness if she was in-

duced to express in words the affective phantasy by which she was at the moment dominated. From this discovery, Breuer arrived at a new method of treatment. He put her into deep hypnosis and made her tell him each time what it was that was oppressing her mind. After the attacks of depressive confusion had been overcome in this way, he employed the same procedure for removing her inhibitions and physical disorders. In her waking state the girl could no more describe than other patients how her symptoms had arisen, and she could discover no link between them and any experiences of her life. In hypnosis she immediately revealed the missing connection. It turned out that all of her symptoms went back to moving events which she had experienced while nursing her father, that is to say, her symptoms had a meaning and were residues of reminiscences of those emotional situations. It turned out in most instances that there had been some thought or impulse which she had had to suppress while she was by her father's sick-bed, and that, in place of it, as a substitute for it, the symptom had afterwards appeared. But as a rule the symptom was not the precipitate of a single such "traumatic" scene, but the result of a summation of a number of similar situations. When the patient recalled a situation of this kind in a hallucinatory way under hypnosis and carried through to its conclusion, with a free expression of emotion, the mental act which she had originally suppressed, the symptom was wiped away and did not return. By this procedure Breuer succeeded, after long and painful efforts, in relieving his patient of all her symptoms.

The patient had recovered and had remained well and, in fact, had become capable of doing serious work. But over the final stage of this hypnotic treatment there rested a veil of obscurity, which Breuer never raised for me, and I could not understand why he had so long kept secret what seemed to me an invaluable discovery instead of making science the richer by it. The immediate question, however, was whether it was possible to generalize from what he had found in a single case. The state of things which he had discovered seemed to me to be of so fundamental a nature that I could not believe it could fail to be present in any case of hysteria if it had been proved to occur in a single one. But the question could only be decided by experience. I therefore began to repeat Breuer's investigations with my own patients and eventually, especially after my visit to Bernheim in 1889 had taught me the limitations of hypnotic suggestion, I worked at nothing else. After observing for several years that his findings were invariably confirmed in every case of hysteria that was accessible to such treatment, and after having accumulated a considerable amount of material in the shape of observations analogous to his, I proposed to him that we should issue a joint publication. At first he objected vehemently, but in the end he gave way, especially since, in the meantime, Janet's works had anticipated some of his results, such as the tracing back of hysterical symptoms to events in the patient's life, and their removal by means of hypnotic reproduction *in statu nascendi*. In 1893 we issued a preliminary

paper, "On the Psychical Mechanism of Hysterical Phenomena," and in 1895 there followed our book, *Studien über Hysterie*

During the years that followed the publication of the *Studien*, having reached these conclusions upon the part played by sexuality in the aetiology of the neuroses, I read some papers on the subject before various medical societies, but was only met with incredulity and contradiction. Breuer did what he could for some time longer to throw the great weight of his personal influence into the scales in my favor, but he effected nothing and it was easy to see that he too shrank from recognizing the sexual aetiology of the neuroses. He might have crushed me or at least disconcerted me by pointing to his own first patient, in whose case sexual factors ostensibly played no part whatever. But he never did so, and I could not understand why this was until I came to interpret the case correctly and to reconstruct, from some remarks which he had made, the conclusion of his treatment of it. After the work of catharsis had seemed to be completed, the girl had suddenly developed a condition of "transference love", he had not connected this with her illness, and had therefore retired in dismay. It was obviously painful to him to be reminded of this apparent *contretemps*. His attitude towards me oscillated for some time between appreciation and bitter criticism, then accidental difficulties arose, as they never fail to do in a strained situation and we parted.

Another result of my taking up the study of nervous disorders in general was that I altered the technique of catharsis. I abandoned hypnosis and sought to replace it by some other method, because I was anxious not to be restricted to treating hysteriform conditions. Increasing experience had also given rise to two grave doubts in my mind as to the use of hypnosis even as a means to catharsis. The first was that even the most brilliant results were liable to be suddenly wiped away if my personal relation with the patient became disturbed. It was true that they became reestablished if a reconciliation could be effected, but such an occurrence showed that the personal emotional relation between doctor and patient was after all stronger than the whole cathartic process, and it was precisely that factor which escaped every effort at control. And one day I had an experience which showed me in the crudest light what I had long suspected. One of my most acquiescent patients, with whom hypnosis had enabled me to bring about the most marvelous results, and whom I was engaged in relieving of her suffering by tracing back her attacks of pain to their origins, as she woke up on one occasion, threw her arms round my neck. The unexpected entrance of a servant relieved us from a painful discussion, but from that time onwards there was a tacit understanding between us that hypnotic treatment should be discontinued. I was modest enough not to attribute the event to my own irresistible personal attraction, and I felt that I had now grasped the nature of the element of mystery that was at work behind hypnosis. In order to exclude it, or at all events to isolate it, it was necessary to abandon hypnosis.

But hypnosis had been of immense help in the cathartic treatment, by

widening the field of the patient's consciousness and putting within his reach knowledge which he did not possess in his waking life. It seemed no easy task to find a substitute for it. While I was in this perplexity, a recollection came to my help of an experiment which I had often witnessed while I was with Bernheim. When the subject awoke from the state of somnambulism, he seemed to have lost all memory of what had happened while he was in that state. But Bernheim maintained that the memory was present all the same, and if he insisted on the subject remembering, if he asseverated that he knew it all and had only to say it, and if at the same time he laid his hand on the subject's forehead, then the forgotten memories used in fact to return, hesitatingly at first, but eventually in a flood and with complete clarity. I determined that I would act in the same way. My patients, I reflected, must in fact "know" all the things which had hitherto only been made accessible to them by hypnosis, and assurances and encouragement on my part, assisted perhaps by the touch of my hand, would, I thought, have the power of forcing the forgotten facts and connections into consciousness. No doubt this seemed a more laborious process than putting them under hypnosis, but it might prove highly instructive. So I abandoned hypnosis, only retaining my practice of requiring the patient to lie upon a sofa while I sat behind him, seeing him, but not seen myself.

For more than ten years after my separation from Breuer, I had no followers. I was completely isolated. In Vienna I was shunned, abroad no notice was taken of me. My *Interpretation of Dreams*, published in 1900, was scarcely reviewed in the technical journals. In my essay "On the History of the Psychoanalytic Movement" I mentioned, as an instance of the attitude adopted by psychiatric circles in Vienna, a conversation with an assistant at the Clinic, who had written a book against my theories, but had never read my *Interpretation of Dreams*. He had been told at the Clinic that it was not worth while. The man in question, who has since become a professor, has gone so far as to repudiate my report of the conversation and to throw doubts in general upon the accuracy of my recollection. I can only say that I stand by every word of the account I then gave.

As soon as I realized the inevitable nature of what I had come up against, my sensitiveness greatly diminished. Moreover, my isolation gradually came to an end. To begin with, a small circle of pupils gathered round me in Vienna, and then, after 1906, came the news that the psychiatrists at Zurich, E. Bleuler, his assistant C. G. Jung, and others, were taking a lively interest in psychoanalysis. We got into personal touch with one another, and at Easter 1908, the friends of the young science met at Salzburg, agreed upon the regular repetition of similar informal congresses and arranged for the publication of a periodical which was edited by Jung and was given the title of *Jahrbuch für psychopathologische und psychoanalytische Forschungen* [Yearbook for Psychopathologic and Psychoanalytic Research]. It was brought out under

the direction of Bleuler and myself and ceased publication at the beginning of the Great War. At the same time that the Swiss psychiatrists joined the movement, interest in psychoanalysis began to be aroused all over Germany. It became the subject of a large number of written comments as well as of lively discussions at scientific congresses. But its reception was nowhere friendly or even benevolently impartial. After the briefest acquaintance with psychoanalysis, German science was united in rejecting it.

1878—

HANS CAROSSA

In many autobiographies one can trace an aesthetic motive. In the instance of Hans Carossa, the German physician-poet, the paramount aesthetic motivation and the literary skill of the self-biographer produce autobiographical writing of high literary value.

He was born in 1878 at Tolz in Upper Bavaria as the son of a doctor. During boyhood he read intensively the poets Klopstock, Schiller, and Morike. On leaving school Carossa studied science and medicine in Munich, Leipzig, and Wurzburg. At the university, new poets—Nietzsche, Dehmel, Gerhart Hauptmann, Arno Holz, and Mombert—exerted their spell upon him, they taught him to bring his poetry into relation with the problems of modern life.

At the age of twenty-four, he began to practice medicine in Passau. To begin with, he felt the clash of vocation and avocation, he was determined to be a poet and doctoring was to be a side line. Upon his father's death Carossa inherited his reputation as a lung specialist, and continued to practice in this field. (In the course of his career, Carossa treated two other well-known writers, Rainer Maria Rilke, and D. H. Lawrence.) During the First World War, he served with the German army in Rumania, was transferred to northern France, took part in Ludendorff's last spring offensive, and was wounded in the left arm. Upon his return, he decided to continue with the practice of medicine, and to write when occasion served.

All the longer prose works of Carossa are autobiographical, his is the only work in German literature of a writer of the first rank who again and again spins enthralling stories from the matter of his own experience, and thus even though the experience is at least outwardly that of thousands of other men. The story of his youth is fascinatingly recounted in *Kindheit und Jugend* (Childhood and Youth). Details of his career may be filled in from a later book, *Führung und Geleit* (Guidance and Companionship), which is more the story of his development as a writer, in the light of his reading and personal contacts with poets, painters, and men of culture. His experiences as an army doctor are related in *Rumanisches Tagebuch* (Rumanian Diary). In all his writing, Carossa is greatly influenced by contemporary painting and sculpture.

WHEN at the age of twenty-four I settled in the magnificently situated peninsular city of Passau to treat patients, I did so with reservations. I intended to carry on my medical practice only as a secondary occupation, while

devoting most of the time to being a poet I had no clear idea how this was to be accomplished, but regarding one thing I was certain everyone should know the work but no one the author. But how much had I misjudged my own nature, and how completely the magical attractive powers of suffering! At first I met the fate of all physicians who begin to practice, it was particularly the serious cases, those that had been abandoned by others, which filled my waiting room. Many assumed that I came from the university equipped with new infallible methods and expected the impossible. Others had known my father as a capable physician and regarded the son as having inherited his experience. The patients in this second group made it least difficult for me, they were already satisfied when I prescribed for them the white pilocarpin tablets, of which the wrapper carried my father's signature.

It happened that one of my first charges was a very beautiful girl, who did gold embroidery and who with her deaf, almost blind mother occupied three rooms along the Lower Sand. When I say "a very beautiful girl" I am thinking only of her face which to the very last day resisted decay, while the rest of her body irresistibly wasted away. Street and house might have been transported from a rural Umbrian village. Below in a tiny open shop sat, day in, day out, a small, old shoemaker around whom the children gathered, because he sang "Schnaderhupfen" incessantly while he drove wooden pegs into leather soles. From the damp, grave-like corridor a stairway which was actually a ladder led up to Maria's sick-room. Sugar-loaf ropes, attached to the wall with hooks, represented the banister. Magnificent, however, was the view from the window over the swiftly flowing, gray-green Inn, of the lofty Mariahilfkirche, whose cupolas with their Tibetan curves add so powerfully to that unique view of city and country. In the countenance and nature of the girl I saw a harmonious mingling of Romanic and Old Bavarian ancestral spirits, while the chill of the imminent end which enveloped her figure gave to her trust an irreplaceable value. Actually, she was already beyond all medical treatment, and her godfather acted against her wish when he brought me to her. Yet she showed no irritation because of the surprise visit, and behaved in a very friendly manner. Nevertheless, she first subjected me to a small test. When I examined her heart I heard no beat, the rhythmic pulsations of the left chest wall were likewise absent. Only after listening very attentively could faint distant sounds be heard. "Where have you hidden your heart?" I said, whereupon she laughed. "Now I know at least that when you listen you also hear something. It took some time before your predecessor discovered that my heart is not in the ring place"—The cunning one had suppressed the fact that she had been born with a *Situs inversus*, an abnormal location of the organs, where the heart is situated on the right side and the liver on the left. This slight evidence of alertness was enough for her to place her entire confidence in me. Subsequently, she also appeared to give me considerable credit for not showing any fear of infection. Calmly and serenely this uncomplainingly dying girl introduced me to the dark realm of patient

suffering and death, so that for a long time I did not recognize it. Unnoticed I became deeply rooted in it and labored in it with all my energy. Unfortunately, this benefited other patients more than the poor girl herself, for whom our art could do no more than alleviate her suffering. Although her condition did indeed improve slightly, she knew exactly what her condition was, and became depressed whenever anyone tried to impose on her. For her, death was a great, solemn event, of which she would let no one deprive her, and it was only a matter of politeness that she sometimes spoke as if she wished to live yet for some time. She had long since sewn her shroud. Every third day she confessed and received communion, and never did I find her happier, more adjusted, or more accessible for wordly conversation than after the village pastor had visited her to prepare her for her hour of death. After a while, she blushingly refused any further examinations, she felt sorry for the doctor, she said, for having to look over and over again at such a "bundle of bones." Alone on this account she welcomed death for she would then be rid of the dreadful frame.

During her last days she often asked for something to relieve her difficulty in breathing. At such times she became loquacious, asked many questions and wanted to learn all about my early life. It is certainly easiest for us to make a general confession to a person who already stands at the portal to the great silence. Nevertheless, my confessions seemed to disappoint her somewhat, she had imagined the history of my youth as having been more adventurous. Simultaneously, for penance she advised me to marry soon, and in order to prevent me from being spoiled by women, she also told me what kind of wife she wanted me to have. She should be healthy but not strikingly beautiful, have a sense of humor, be kind to animals, and be able to play piano or violin, these were the chief qualities that she demanded. "Tomorrow I will tell you something about myself," she whispered in farewell. But when I came the next day she had lost her speech and was no longer able to raise her hands. She moved her lips and with piercing glance looked now at me, now at her mother, finally, she endeavored to smile. Thereupon, with eyes half open, she fell into a sleep from which she no longer awoke.

In the weeks that followed, I felt that I had become older and had also changed in other ways. It was as if the delicate maiden had forever bound me to the great Order of the Hopeless Ones. Thus was marked off the new space within which my life was to move. Whether I really belonged in this space was a question that I could never quite suppress. As long as I felt myself equal to my medical tasks, it did not bother me very much. But every failure reminded me of my concealed poetic art, and I reproached myself with having taken the false path. The artist carries on his activity alone and unattached. It gives him the right to flee as soon as he feels himself moving into inappropriate situations. The doctor's situation is very different. His art does not separate him from other people, and flight on his part would be a betrayal of the sufferers who trust him. To this must be added the circum-

stance that in almost everyone whom he meets he must soon recognize a sufferer who needs his help. Thus there existed a tragic situation, which, fortunately, I did not see in its entirety, otherwise I would have had to say to myself that my life would hardly be long enough to change it basically.

1876 — 1940

HANS ZINSSER

Social and economic thought has been in considerable ferment in recent years, and it is obvious that medicine as a vital element of the body politic can not remain impervious to the prevailing climate of opinion. No intelligent physician can remain unaware that social and economic changes of great moment are taking place, and that these changes are bound to affect medicine in its various aspects. Recognizing this development, many doctors like Hans Zinsser believe that the major problem confronting the medical profession is the determination of the way in which the best elements in the science and practice of medicine can be preserved and embodied in whatever social organization may develop, so that eventually the best possible care may be made available to the greatest number of persons in the most economical manner.

Hans Zinsser, scientist and poet, was born in New York in 1878. His collegiate education was obtained at Columbia University and in 1903 he received his medical degree from the same institution. Very early Zinsser acquired an interest in bacteriology, and after completing his internship became bacteriologist to various hospitals. In 1910 he was called to Stanford University as professor of bacteriology. Zinsser subsequently taught this subject at Columbia (1913-1923) and Harvard (1923-1940).

He was active in many enterprises connected with his scientific interests. In 1915 he was a member of the American Red Cross Sanitary Commission to Serbia. When the United States entered World War I, he was commissioned as a major in the Medical Corps, later he was promoted to the rank of colonel. After the war, in the summer of 1923, Zinsser was Sanitary Commissioner in Russia for the League of Nations Health Section.

While his scientific work is well known to members of the medical profession and related groups, Zinsser is better known to the general public as the author of *Rats, Lice, and History* (1935), a brilliant "biographical" account of typhus fever, and of his autobiography *As I Remember Him* (1940). It is not so widely known, however, that he was also a poet who produced some exquisitely poignant sonnets. The poems of Hans Zinsser were published in 1942 under the title *Spring, Summer, and Autumn*. His autobiography is written as though by another person, dealing ostensibly with R. S., the pseudonym that Zinsser employed to conceal his identity as a poet.

YOUNG Americans who entered medicine at the time that R. S. did were more fortunate than they knew, for they were destined to participate in a professional evolution that has few parallels. The development of modern

medicine in our country is a thrilling chapter in its intellectual history, and illustrates, more than is generally recognized, the magnificent self-corrective vitality of this profession. At the present time, there is a strong popular movement for the socialization of medical practice, and an effort, essentially praiseworthy, to bring the benefits of discovery and of improved care within the reach of the population as a whole, irrespective of ability to pay. This is as it should be, and there is little question of the fact that the old system of charity clinics and hospitals no longer meets modern requirements. Moreover, it is morally sound to postulate that all discovered means of alleviating suffering and sorrow, maintaining health and preventing death, should be freely available to all that need them—without reference to social, racial, or economic condition. This will demand a complete reorganization of practice, in which the medical profession must, and should, play the leading rôle, and undoubtedly it will, though there has been a tendency on the part of reformers, sociologists, government agencies, and professors of the teachers'-union type to assume that reluctance to accept any and all proposals indicates a conservatism of self-preservation based on purely venal motives. Let it not be forgotten that the situation as it now exists is entirely the consequence of the progress made in medical discovery by the profession itself, that the enhanced power for good which is now claimed as the latest of the inalienable rights of man is the result of the labors of medical investigators and practitioners, and that public-health organization, social service, group practice, and all other advances which have revolutionized the relationship of medical knowledge to the population—even housing, nutrition, and the sociological conditions that influence health, such as wage scales, public parks, industrial hygiene, etc. etc.—were given their basis of factual observation and their early organization for practical application by the insight of medical men.

There is in the practice of medicine a unique quality that is a source both of inspiration and of terror to the conscientious young physician. Dealing as it does with matters of life and death, any lack of knowledge or of skill becomes a positive fault of omission and even guilt. If a patient dies or is incapacitated—with all the heartbreak and suffering that this implies—because the attending practitioner was ignorant of measures that are available and that might have brought another outcome in more skillful hands, he is as responsible as though he had committed a willful injury. This is true not only of surgical procedures, but equally—perhaps more frequently so—in infectious diseases, where speed and precision of diagnosis by well-known methods and vigorous intelligent treatment may decide the issue within a few hours, one way or the other. It is this consideration, more than any other, which—with the growing accumulation of knowledge that no one man can hope to master completely—has automatically led to the organization of group medicine, the increasing cooperation of city and state health departments, and the more generalized utilization of hospital facilities. And since it is essential that all effective knowledge must be applied to rich and poor alike, unless our profession is to lose

the fine, ancient traditions of its history, a considerable readjustment of its activities is inevitable. These simple considerations are at the bottom of all the agitation for the so-called "socialization" of medicine on which great volumes of reports have already been issued. It should not be forgotten, however, by the ardent lay reformers that evolution in these directions has long been going on within the profession itself, and, within a single span of professional life, enormous progress—almost entirely originated by public-spirited doctors—has been achieved. Controversies have turned not at all on the objectives to be attained, but rather upon the manner in which the reorganization is to be carried out.

Now it is always relatively easy to conceive an ideal scheme or organization which shall represent the perfect mechanism for social reform. But such conceptions are likely to neglect certain imponderable human values without which the machinery of service cannot run smoothly. In medicine, the problem is to find a solution which shall meet the requirements of effective scientific care of all those who require it, and retain at the same time that sense of personal responsibility, compassion, and judgment without which the physician becomes a mere technician. It is this consideration which has given the impression of exaggerated conservatism in many actually progressive physicians. We realize—more acutely than most of the lay reformers—the obligations of greater precision of practice and wider and cheaper application of the benefits of progress. But we are reluctant to lose our "horse and buggy" doctors, or to deprive the suffering patient of that solace and support which only the close personal relationship with a wise and compassionate physician can give.

During little more than the space of the professional lives of R S's generation, American medicine developed from a relatively primitive dependence upon European thought to its present magnificent vigor. How this came about is a unique illustration of cooperative effort, wise benevolence, and healthy self-criticism. To understand it wholly, we must sketch the dependence of modern medical development upon that of the basic sciences, its emergence—in Europe—from mediaevalism, and the manner in which these influences were transported to the new continent.

1868—

ALICE HAMILTON

Occupational medicine in the United States is of relatively recent origin, and in its beginnings the name of Alice Hamilton looms large. When she began her work, a foreign doctor could dispose of American activity in this field with the curt remark that it did not exist. At the time of her retirement from active participation, the health problems arising out of exposure to noxious substances and dangerous

working conditions had been recognized in numerous instances and measures had been taken to prevent or to ameliorate the effects resulting from such exposure. Great changes have come during this period, great reforms in industrial hygiene have been brought about by the joint effort of physicians and legislators. And in all this Alice Hamilton played an important part.

IT WAS while I was working at the Memorial Institute that an opportunity came for me to bring my scientific training to bear on a problem at Hull-House. (My efforts in the baby clinic could not be called scientific.) This was in the fall of 1902, when I came back from Mackinac to find Chicago in the grip of one of her worst epidemics of typhoid fever. At that time the water, drawn from the Lake, was not chlorinated, the only precaution taken against dangerous pollution was to make daily cultures of samples from the different pumping stations and the next day, when the cultures had had time to develop, publish the results and tell the public whether or not to boil the water. It was assumed that housewives would look up these instructions every day and act accordingly, but the actual result was that typhoid was endemic in Chicago and periodically it reached epidemic proportions. On this particular occasion Hull-House was the center of the hardest-struck region of the city—why, nobody knew. Miss Addams said she thought a bacteriologist ought to be able to discover the reason.

It was certainly not a simple problem. The pumping station which sent water to the Nineteenth Ward sent it to a wide section of the West Side, the milk supply was the same as that for neighboring wards. There must be some local condition to account for the excessive number of cases. As I prowled about the streets and the ramshackle wooden tenement houses I saw the outdoor privies (forbidden by law but flourishing nevertheless), some of them in backyards below the level of the street and overflowing in heavy rains, the wretched water closets indoors, one for four or more families, filthy and with the plumbing out of order because nobody was responsible for cleaning or repairs, and swarms of flies everywhere. Here, I thought, was the solution of the problem. The flies were feeding on typhoid-infected excreta and then lighting on food and milk. During the Spanish-American War, when we lost more men from typhoid fever than from Spanish bullets, Vaughan, Shakespeare, and Reed had made a study of conditions in camps—open latrines, unscreened food—which led them to attribute an important role in the spread of typhoid fever to the house fly. That was what started the "Swat the fly" campaign.

Naturally, my theory had to be put to the test, so, with two of the residents to help me, Maude Gernon and Gertrude Howe, I went forth to collect flies—from privies and kitchens and filthy water closets. We would drop the flies into tubes of broth and I would take them to the laboratory, incubate the tubes, and plate them out at varying intervals. It was a triumph to find the typhoid bacillus and I hastened to write up the discovery and its background.

for presentation before the Chicago Medical Society. This was just the sort of thing to catch public attention: it was simple and easily understood, it fitted in with the revelations made during the Spanish War of the deadly activities of house flies, and it explained why the slums had so much more typhoid than the well-screened and decently drained homes of the well-to-do.

I am sure I gained more kudos from my paper on flies and typhoid than from any other piece of work I ever did. Even today I sometimes hear an echo of it. In Chicago the effect was most gratifying, a public inquiry resulted in a complete reorganization of the Health Department under a chief loaned by the Public Health Service, and an expert was put in charge of tenement-house inspection. But unfortunately my gratification over my part in all this did not last long. After the tumult had died down I discovered a fact which never gained much publicity but was well-authenticated. My flies had had little or nothing to do with the cases of typhoid in the Nineteenth Ward. The cause was simpler but so much more discreditable that the Board of Health had not dared reveal it. It seems that in our local pumping station, on West Harrison Street, near Halsted, a break had occurred which resulted in an escape of sewage into the water pipes and for three days our neighborhood drank that water before the leak was discovered and stopped. This was after the epidemic had started. The truth was more shocking than my ingenious theory, and it never came to light, so far as the public was concerned. For years, although I did my best to lay the ghosts of those flies, they haunted me and mortified me, compelling me again and again to explain to deeply impressed audiences that the dramatic story their chairman had just rehearsed had little foundations in fact.

The one thing about Boston which is really hard for a Midwesterner to accept is the attitude toward women, partly because it is so unexpected. We all think of Boston as the home of progressive movements. We know also that she has been the home of more famous women than any Western city, and that the proportion of women in Boston is much higher than in the West. So it seems incomprehensible that this enlightened city should have opposed woman suffrage long after Chicagoans had won it (I voted for Wilson in 1912), and that women doctors should be less recognized in Boston than they are in New Orleans. No woman can be on the staff of any important hospital in Boston, but in New Orleans she can. I think it is the influence of Harvard, really a deeply pervading influence on the mind of Boston. I was at a medical dinner in Boston where the guests of honor were two public-health men from Yugoslavia. Someone spoke of the exclusion of women from Harvard. The two foreigners could not believe their ears. "Harvard not admit women! If we should tell that at home nobody would believe us. Why, even Turkey admits women to her universities."

When Edith and I were students in Germany, we were told that even if other German universities opened their doors to women, Bonn never would,

for it was the stronghold of the *Junker* aristocracy. Then under the Weimar Republic Bonn did, and so did all other institutions in Germany. A very attractive German woman doctor came to Boston when she and her half-Jewish husband had had to leave Germany, and after much difficulty she secured some work in the Outpatient Department of the Children's Hospital, for she is a child specialist. She was astonished at the contrast between Boston and Berlin. There she was on the staff of a big children's hospital where the majority of the doctors were women because work with children is a specialty appropriate for women. In Boston she found women could hold only the most inferior positions in such hospitals with no hope of going higher.

Most people think that women in medicine have now attained equality with men—but that is true in one country only, Russia. In the United States a woman finds it harder to gain entrance to the medical schools than does a man, much harder to get her internship in a first-class hospital, and difficult if not impossible to get on the staff of an important hospital. Yet without such hospital connections she can never hope to reach the highest ranks in her profession. As for private practice, I sometimes wonder whether it was not easier to make a start in the old days, when a woman doctor could count on the loyalty of a group of devoted feminists who would choose a woman because she was a woman. We do not find their like now.

Yet I must admit that though I have seen the difficulties women doctors have to overcome, I have never suffered from them myself. During the period of my laboratory work I could join any scientific society and speak and publish as freely as if I were a man. And when I went into industrial medicine I often felt that my sex was a help, not a handicap. Employers and doctors both appeared more willing to listen to me as I told them their duty toward their employees and patients than they would have if I had been a man. It seemed natural and right that a woman should put the care of the producing workman ahead of the value of the thing he was producing, in a man it would have been sentimentality or radicalism.

Once in the days before the suffrage amendment I stood beside the manager of a big celluloid factory at his office window, watching the workmen pouring out of the plant. He turned to me and asked "Are you in favor of woman suffrage?" "Yes," I said, "I have always been." "So am I," he said, "I want the woman's point of view. Now take this crowd. As you look down on them you see so many fathers and husbands and brothers and sons, real men, individuals. Don't you? All I see is a lot of my hands, a part, and a bothersome part, of my machinery, and that is the way most men feel. Until we get into industry the woman's way of looking at people we shall never run it as it ought to be run."

1876—

EDWARD H. HUME

Widely known as a medical educator, Dr Hume was born of American parents in Ahmednagar, India. There he spent his early years, returning to the United States for his education. In 1897 he received his B.A. degree from Yale, and in 1901 his medical degree from the Johns Hopkins medical school. From 1903 to 1905, Dr Hume was Acting Assistant Surgeon, U.S. Public Health Service, at Bombay, India. In 1906 he established the Yale Hospital at Changsha in China, of which institution he became senior physician, a position that he held until 1923. During this period he established the Yale-in-China Medical School, creating a medical center where West might glean wisdom from East, and East could learn science from West. In his autobiographical *Doctors East, Doctors West*, he gives one of the most enlightening interpretations of China and the Chinese.

IT WAS opening day at the new hospital! The founders at Johns Hopkins couldn't possibly have been more elated, when they opened the great hospital in Baltimore in 1889, than I was, seventeen years later, when the unpretentious Yali I Yuan opened its doors at Changsha.

Here at last was a place in which I could put into practice something of what I had learned from my great teachers—Osler, and Welch, Halsted and Kelly. I had now actually become the head of a hospital, even though a tiny one, located on a narrow, crowded street at the heart of a provincial capital, one of the storm centers of China.

We had inserted announcements for several days in the two leading newspapers of Changsha, and put up posters on the wall outside, saying that the dispensary would be open for patients on a certain morning. We had written formal letters to Governor Ts'ên and to the other provincial officials, saying that our "unpretentious building" was about to open and that we hoped, before long, to be honored by their official visits.

On that first morning, a crowd milled round the doorway, curious and hesitant, watching to see who would be the first to ask for treatment. Finally one man, looking a bit sheepish and as if he wanted to get it over with, stepped up to Gatekeeper Chou.

"How much is it?" he asked timidly. "I want to register!"

"Fifty cash a piece! No less!" Fifty cash was then equal to about two cents in United States currency. "You get a numbered tally that entitles you to be seen by the doctor. First come, first served!"

"Make it forty cash," the patient shouted. "You should celebrate the opening day by offering reduced rates!"

I was seated inside but could overhear the candidate bargaining. I thought of the grain shops and the big cloth shops up the street. There was always a bid for business when a new place opened. And, of course, they seldom made

a sale without a dialogue about the price. The common routine was for the shopkeeper to name his price, then for the customer to make a counterbid and to start moving away. The shopkeeper would wait till the prospective buyer had almost disappeared from sight, then shout for him to come back. Once agreement was reached, whether on the seller's terms or the buyer's, there was no deviation. It was like signing a legal deed. No wonder the first man up to register at our gate thought he, too, was entitled to a bargain.

But the gatekeeper remained adamant. "Fifty cash per person, no less! Think what you would have to pay if you went to consult some of the famous practitioners of our own Chinese medicine in Changsha. You would never get off so cheaply."

Then the second man, and the third, then a poorly dressed woman carrying a child. She wanted to be examined herself and to have the doctor see her child as well. She wanted him to look at those swollen glands, and hoped it could all be done for one admission fee.

Then came a boy from the Yali School, who was not required to register. The school made a monthly grant to cover student medical care. Before long a dozen patients were seated quietly in the waiting room. Gatekeeper Chou struck a bell. No more registrations that morning!

While I sat there listening to the conversation at the registration desk, I thought back to the proclamation on the wall of the police station at the Little West Gate, the day we arrived. Would the local gentry, knowing that we were ready to start, try to move us away from the city? They had insisted, a few years earlier, on having an American engineer move his railroad tracks well to the east of the city so that they should not come too close to the southeast corner of the city wall or disturb the graveyards of their ancestors outside the South Gate. They knew all about us, of course, for Mr. Liu had taken the rental agreement to be stamped at the yamen. Transactions such as that could never remain secret in China.

I wondered, too, what the ordinary citizens were thinking of this new institution. Would they believe rumors about the "foreign doctor" and the medicines he was said to make out of the eyes of little children? Would they classify this new Westerner with the best of their own medical practitioners, or would they think of him as in the category with the diviner and the astrologer? These might, of course, be consulted by good citizens in medical emergencies, but they never ranked with the leading doctors.

As a matter of fact, during the previous week, some of the well-known families had sent their servants over to ask about our registration fees and the charges for treatment at the Yali Hospital. There was no public dispensary in the city where the poor could get treatment for a moderate fee.

We knew, of course, that not very many would come at first. They would send scouts to watch, to test us, to report back to their families. Then they would discuss us at home, and, if not wholly dissatisfied, send others to look and inquire.

Mothers, of course, would be conservative. Every mother in Changsha could treat her child with the right dose of rhubarb or licorice or cinnamon. She knew what the indications were for these and all the other common drugs. She was certain to try them before coming to consult me. After all, I was a "foreign doctor." How natural that she should hesitate about me! If drugs failed, a mother could always go to a temple. She had known from childhood that prayer at a temple often proved effective. She had been taught that

If there is prayer,
There is bound to be an answer

It was natural that in the atmosphere of a Chinese city where religion and health were constantly thought of together, there should be prayer and worship at the Yali Hospital as it began its work. A Chinese pastor came over to lead the opening service. He read from the New Testament the story of the Healer who, nearly two thousand years before, found a cripple lying at the Pool of Bethesda and had startled him by asking, "Don't you want to be made whole?"

It was a moving experience to follow the eyes of the group that day as they listened to the speaker. "This hospital," he told them, "is founded by followers of the same great Healer. It is opening its doors in Changsha today, and hopes to minister as that Healer did, to all the people of this city. We invite you to tell your friends about the Yali Hospital. Come with them if they are inclined to be timid. They will soon learn that this is a place of healing, where all may meet as friends."

During the summer I wrote and urged Professor William H. Welch of Johns Hopkins, my old teacher, to visit Changsha in October. I told him we should have a festive occasion if only he would come and lay the cornerstone. He knew the donor well, and wrote back: "Dear Hume, I have never laid a cornerstone in my life, but I am perfectly willing to try."

The party of visitors, Dr. Welch, Dr. Simon Flexner, and others, reached Changsha on October 17 and were busy people for two days. They spent a large portion of their time in our hospital on the Street of the Grass Tide, inspecting each ward, public and private, the operating rooms, the library. But for Dr. Welch the laboratory was the center of interest. We begged him to examine and describe for us a greatly enlarged spleen which one of our surgeons had just removed. No one who was with him that afternoon will ever forget the eagerness of the scientist as he studied the specimen. As he went out of the door, he said, "I shall think it over and tell you, before I leave Changsha, what my conclusions are."

On the morning of the eighteenth we took the party across the river to climb Yolu Shan, our favorite mountain, known as the "Mountain of the Three Religions." We showed them the spreading Confucian temple at the base, designed to be visited by scholars who were seeking, in the old days to pass the classical provincial examinations, the Buddhist monastery halfway

up, and the Taoist temple at the top, with the glorious outlook through the Gate with the View of the Hsiang One could see up the river valley for nearly thirty miles

As we entered the temple, the venerable chief priest came out and greeted Dr Welch and his colleagues with profound bows "How old are you, revered sir?" he asked Dr Welch

Without a moment's hesitation the doctor, who was white-haired but not at all old-looking, flashed back, "I am a hundred and fifty-six years old" The other American guests, happily, gave no sign of their surprise, but the Taoist priest, not accustomed to such visitors, bowed again and again, and asked me to convey to Dr Welch his profound gratitude that his temple had been thus honored

"Revered sir," he said, "I should like to hang in the corridors of your house a lacquered tribute panel saying 'Visitor from across the sea, I honor you as a medical forefather'"

That afternoon, October 18, we celebrated the laying of the cornerstone The splendid granite block hung suspended, ready for the trowel and mortar, with the name of the hospital and the date carved deep into the stone in Chinese and English characters Before the stone was lowered, Dr Welch made the chief address of the day He referred to the fact that, in 1854, the first Chinese student to go abroad, Yung Wing, had received his bachelor's degree at Yale, that he, himself, had received his own degree there in 1870 An occasion like this, he said, marked one of these great moments, when science and humanity, permeated by the spirit of religion, reached out and joined hands across the sea There could be no interfering boundaries of race or creed in such an institution He told the audience of the three conditions laid down by the donor of the hospital and added that, so soon as he should return to America, he would tell him of this occasion in Changsha as a happy omen of the way in which those conditions were already being met

That night we took the visiting party to the steamer for Nankow While we were still standing on the dock, waving to the guests on the deck, Dr Welch leaned over the rail and called out, "Oh, Hume, I have been thinking about that spleen I am sure it was a case of chronic passive congestion!" Truly the farewell words of a pathologist!

The cornerstone of modern medical practice and education, the goal of my life in China, was now well and truly laid

1897—

GORDON S SEAGRAVE

Born in Rangoon, Burma, as the son of a missionary, Dr Seagrave at an early age decided to become a medical missionary He received his education at Johns Hop-

kins University, and started his medical mission in the Northern Shan States with a wastebasketful of broken-down surgical instruments salvaged from Johns Hopkins. For nearly twenty years he practiced medicine and surgery on the China border of Burma. Then the war came. In 1942 he joined the U.S. Army Medical Corps under General Stilwell and served with the Chinese Fifth Army through the Burma campaign, marching to India with General Stilwell in the retreat. Later, Dr. Seagrave returned to Burma. In addition to his well-known books, *Burma Surgeon* and *Burma Surgeon Returns*, he has also written *Waste-Basket Surgery* (1930) and *Tales of a Waste-Basket Surgeon* (1938).

MY LUCK was with me again, though, on that trip. A man came to me with tuberculous lungs. I went over him carefully and told him I was sorry, I couldn't do a thing for him. With those lungs he couldn't live more than a year. One year later, to a day, he died, and my reputation among the Shans was made!

Soon after that tour the Kachins threw a huge convention in their mission compound across the street. They had heard of the new doctor, so as soon as they had registered they came over to put me to the test. One man had a huge adenomatous goiter. "You'll have to have the thing cut out," I said, and nearly fainted when he replied, "All right, go ahead."

I ran up to the house.

"Tiny," I called, "I've got an operation to do. A goiter as big as a grapefruit. Will you give the anesthetic for me? I'll tell you what to do."

Tiny agreed. I got out my pressure cooker and sterilized some towels. The wastebasket instruments were put on to boil. Tiny got the chloroform bottle and started to pour. Then I began to cut, cut and tie, cut and tie. That's all there is to surgery. I cut down near everything that man had in his neck before I got the goiter out. Then I sewed up his ribbon muscles and skin and sat down beside him to wait. When he was fully conscious I said, "Listen, fellow, I want you to promise me to lie flat on your back for several days. If you try to sit up your neck's going to fall apart. Understand?"

Yes, he understood. He would be a good boy.

Much relieved that he had not died on the table, I went up to breakfast. When I came down, half an hour later, he was already sitting up in bed.

The next morning I was called for an obstetrical case the other side of the river. As I rode up the street that afternoon, on my return, I saw the Kachin convention was having a feast out on the grass. Mr. Sword, the Kachin missionary, waved to me to come and join them. While I was waiting to be served, I looked around and saw a funny apparition. A Kachin man was standing near, dressed in a most extraordinary manner. As Kipling says, "Nothin' much before, an' rather less than 'arf o' that be'ind." He had a bandage around his neck. I looked again. Yes, there was my goiter patient! He had smelled the pork curry and had come across the street to get it. And yet he couldn't die!

This was the first time in northern Burma and the Shan States that a goiter had been successfully removed. People came in willing to take a chance at other operations. I remember a few key cases that opened up whole districts to a confidence in us. There was a cancer of the breast that had already reached the cauliflower stage but was not yet fastened irremovably to the chest wall. She was from Momeik State, down toward the Ruby Mines at Mogok. For years she spread the news of how her breast had been removed and skin from her leg grafted onto her bare chest in sheets! There was a woman with a sarcoma of the orbit pushing her eyeball way out of her head. We removed the eyeball and the tumor, and, until last year, she was still sending patients to us. A rich Chinese came down from Tengyueh, capital of Western Yunnan. He had been inexpertly operated on for amebic abscess of the liver, and the fistula had never closed. He wanted another operation, but we cured him with injections of emetine and irrigations of quinine and salvarsan. A high-class Kachin woman of wide influence had had one girl baby followed by several abortions, and wanted a boy badly. We removed a dermoid cyst of the ovary and a year later she did have a boy.

In lots of these cases we had the breaks. I had not had more than a minimum variety of operations on which to acquire experience under guidance in America, and I looked forward with dread to every new operation I had to do. But I never had any overwhelming love for a quitter. When a new operation needed to be done, I got out my books and studied every detail. Then I was profusely sick, went to bed on it, and the next morning, still nauseated, started operating. Somehow or other, the first three operations of each variety were more or less uncomplicated and the patients got along well. After that—God help me! But by that time I could feel confident that the reason the patient died was not all my fault, and I could continue trying to save lives.

Tiny was quite annoyed at the way I operate. She says that all through my operations I am either praying out loud, singing, or swearing. She is wrong. They are all three just my peculiar way of praying.

We decided to make the hospital out of cobblestone, unlimited amounts being available in the river beds within two miles of the hospital site. I telegraphed to my father to buy us a ton-and-a-half truck in Rangoon, ship it loaded to Mandalay by steamer, where Tiny and I would pick it up. On our way down in the Chev, we heard disconcerting rumors that trucks were not allowed to use the Mandalay-Maymyo road, but the truck was on the steamer, and my father had thoroughly loaded it to the skies, so that we had to stop every few miles as we drove along and pick up a couple of chairs or a box that had been knocked off by the branches of the trees. When we got to the foot of the mountain, there, by the side of the road, was a sign stating that trucks with a load capacity of more than half a ton were forbidden to use the road. And here I was with a ton-and-a-half truck, and was it loaded! There

was nothing for it but to do what any other good missionary would have done. I turned the truck off the side of the road into the jungle and waited till it was almost dark, and then I started up that hill as fast as I could go with my foot right on the floor of the car!

Halfway up the mountain a horn sounded behind me. A huge car wanted to get past. And to the radiator of that car was tied an English flag. The only man in Burma permitted to fly the Union Jack on his car is the governor of Burma, and there was the governor himself. Was my face red? It was so red it made the governor think I was one of those hard-drinking British Army sergeants driving an Army truck! At any rate the governor said nothing, and we got our truck out beyond Maymyo onto the dirt roads of the Northern Shan States. Those Shan States roads are made of red clay that becomes very slippery indeed when it rains. And of course it rained. It always rains when I have to travel. And how that truck could skid! Tiny was following behind me in the Chev, until she saw me turn end for end several times, and then she insisted on going first. If her husband was going to do those foolish things, she thought she could stand it better if she didn't have to look on. So she went first, I came along behind, and in the first twenty-four hours we covered twenty-five miles. But we got that truck to Namkham.

Then we began to haul stone. We hired a few coolies to gather the stone, and then after the hospital work was done the nurses would pile on board and we would go out, throw the stones on, and haul back several loads. I asked my Chinese carpenter if he could estimate how much stone we would need. He could. He took the plans and a pencil and in a few minutes said we would need so many tons of stone. Later I discovered that if we had hauled as much stone as that Chinese carpenter told me to haul, the hospital would have been solid throughout like the pyramids.

On furlough in America I had picked up an old broken theodolite that Tiny's father had thrown away years and years before. My father and I took the theodolite, surveyed the hospital site, which was on the top of a hundred-foot hill by the side of the Bhamo branch of the Burma Road, leveled it off, and dug the foundation pits. Now we were all ready to build, but I had not the slightest idea how to begin. In my medical course in Johns Hopkins they had not taught me how to mix dental cement, even, let alone lime and sand mortar. But there was a missionary named Weeks in Moulmain who had put up a lot of fine buildings. I telegraphed him inviting him to spend his summer vacation in Namkham. He accepted, but could spare only one week. On the afternoon of the day he arrived for his "vacation" we started putting in the foundations, and by the time he left, a week later, we had one corner of the hospital built up to the tops of the windows of the lower story. Now I understood how to fasten those rocks together. His vacation had been such a success that I invited other knowledgeable missionaries to spend their vacations in Namkham. What a summer that was! At our meals together we ate and laughed so loudly they could hear us at the hospital a couple of blocks away.

Hundreds of tons of building material had to be brought in from Lashio, a hundred and thirty miles away. Tiny and I used to do this job together.

We started from Namkham at dawn and covered a hundred and thirty miles into Lashio by three in the afternoon, threw on a load of stuff, and started right back. When I became so sleepy that I couldn't drive, Tiny took the wheel. Once, after midnight, she was driving. I was sound asleep in the back of the truck with a half dozen barrels of cement. Suddenly she stopped the truck, so suddenly that the cement barrels began tumbling all about me, and screamed, "There is a tiger in the middle of the road. Wake up and shoot him." It all fitted in so well with a lovely nightmare I was enjoying that it took me some time to wake up, by which time the tiger had disappeared.

Another day at noon, we stopped just before hitting a giant leopard warming himself in the middle of the road. The leopard got up lazily and slipped over the side of the road into some bushes. I reached for my .32 rifle, got up on the hood, jerked down the lever to throw a cartridge from the magazine into the chamber, waited for the leopard to reappear. He never turned up, which was good for me because someone had unloaded the gun and stolen all the cartridges!

Aside from three good Chinese carpenters for the woodwork and, later, a fine Indian chap to do the plastering, most of our work was done by Shan and Kachin coolies, and a great deal of it by voluntary free labor. We chose half a dozen of the most intelligent and taught them to be expert masons for cobblestone work. The roof was completed just as the rains were breaking. Then we put in the electricity and plumbing. Mr. Smith, professor of physics in Rangoon, put in my Pelton wheel-dynamo outfit, but I had to do the plumbing myself. I was determined to have modern plumbing even if I had no hospital. All the piping was ordered in Rangoon, cut to what I thought were the right lengths, with both ends threaded. As long as the pipe was correct in length, it was quite easy. But when it was too long, I had trouble. I could cut the pipe to the right length, but I could not afford a set of dies to cut the threads on the end of the new pipe, so I had to pull out my hack saw and make the threads. By dint of sawing threads and fastening things together, the plumbing was all in and everything worked splendidly, but before long the whole system was stopped up from top to bottom. You see, the patients would throw not only paper but gauze dressings, sticks and even stones into the toilets. So I had to take the plumbing apart, clean it, and put it together again.

Not having to pay out half our funds to contractors, we not only completed the entire building according to the plans, but had a much more firmly constructed building, since we had used tons and tons more cement than the specifications called for.

1873—

VICTOR HEISER

Dr Heiser, widely known as a hygienist, was born in Pennsylvania in 1873. He received his medical training at the Jefferson Medical College of Philadelphia, graduating in 1897. The following year Dr Heiser entered the U.S. Marine Hospital Service. In the course of his duties, he worked as an immigration officer in Europe, and studied plague in Egypt. In 1903 he became chief quarantine officer, and in 1905, director of health of the Philippine Islands. These positions he held until 1915. From 1915 to 1934 Dr Heiser was associate director of the International Health Division of the Rockefeller Foundation. He has many publications to his credit, but is best known for *An American Doctor's Odyssey*.

THE planters had long before made up their minds they would allow no interference from the local health authorities. They would neither give nor receive aid in dealing with the hookworm situation, because they were convinced the intrusion of sanitarians would hurt business. I was well aware that Lord Crewe, when at the India Office, had threatened to stop their labor supply unless they took active steps to deal with the hookworm situation, they had then made evasive but plausible answers, and things had gone on as before.

The resistance of the planters had to be overcome, but our policy demanded also that we conduct our work under the official auspices of the Health Service. Consequently, my first step on landing at Colombo was to call upon the incoming head of the department, Dr G. J. Rutherford. After the amenities had been complied with, we began discussing the new venture in health launched by the Rockefeller Foundation and what it purposed to do. "What's the present hookworm situation in Ceylon?" I asked.

"It's frightful," he promptly admitted.

"Why should that be? You have laws enough to cover any action you might take, haven't you?"

"Yes, we have, but the tea planting interests are all-powerful, and they are opposed to taking adequate measures against hookworm. We issue a regulation—they get it suspended. We're helpless."

"Would you have any objection to a survey made under the auspices of the Rockefeller Foundation—supposing it could be arranged with the planters?"

"Not at all, provided your men operated under our Health Service."

Since this had been my objective from the beginning, I assented readily to his condition.

That evening at the Colombo Club I was fortunate enough to meet the Chairman of the Estates Agents Association, which represented the absentee landlords of England and was the dominant force in local politics. In the pleasant club atmosphere I was able to establish friendly relations. "They tell

me you've lots of hookworm in Ceylon," I said, seizing the opportunity, "but they also say you planters won't allow anything to be done about it"

"You're jolly well right we won't"

"Why not?"

"We're not going to have a lot of health fellows crashing into our affairs. Look at what happened last year. There was a plague scare just when our best harvest was due. It amounted to nothing, but those health inspectors came along threatening to inoculate our laborers, and almost before we could turn around thousands of them were on their way back to India. It nearly ruined us. If we ever let the Health Service get started on hookworm, all our laborers would run away, and we couldn't harvest our tea and rubber. No! No health business for us."

"Well," I replied, "I'm not a reporter or a writer for muck raking magazines. But if I wanted to, I could make your actions look like the Belgian Congo atrocities. Here you are—rich Englishmen—sacrificing thousands of lives just to get your tea harvested."

"But we have no such intentions," he indignantly protested.

"It's actually happening. Why don't you do something about it?"

"Nothing can be done with Tamils," he asserted with an air of finality.

"That's all I've heard in the East for fifteen years. When I first began working with a peasant population, I was informed everywhere 'Nothing can be done.' But it was done in the Philippines."

"Perhaps American millions did accomplish a little there. But nothing can be done with our coolies."

"We won't get very far by my insisting it can, and you that it cannot. Let's talk about this as a business proposition. How much does it cost you to bring a laborer here from Madras?"

"That's a commercial secret."

"I don't care about your exact figures. I'm not in business. But does it cost you a hundred rupees?"

"All of that."

"How many laborers do you have to import?"

"About a hundred thousand a year."

"That runs into quite a sum of money, doesn't it? Now, on every estate you have a hospital. It may be large or small, but it is constantly occupied. Doctors and nurses alone must cost you a lot. And am I correct in assuming that you have to pay your laborers whether or not they are working?"

"Yes."

"Suppose we could reduce the hospital expense by half?"

"That would certainly save us a great deal."

"Here's another important point to be considered. The Tamil women tend to be sterile because of anemia from hookworm. If they could produce children, you wouldn't have to bring over fresh labor all the time. You could raise your own. Wouldn't that be advantageous in the long run?"

"It would increase our profits tremendously—that goes without saying"

"So health and the planting business have something in common after all? Now, there's a way to test out these arguments I've been giving you. Suppose you were to pick out some estates employing several thousand laborers and allow the Rockefeller Foundation to bring in experts to demonstrate whether we could cure them without having them run away. You'd be the judge of our success."

"I don't see how that could do us any harm. But we wouldn't want our own Health Department concerned in any way. They're all tangled up in red tape, and would only make a lot of trouble. You'd have to leave them out of it."

"I'm afraid we couldn't do that. If you don't like your present Health Department, it's your privilege to recommend a change. But we cannot go anywhere at the request of a commercial organization alone, we must have an official invitation from your Governor."

"Well, I'll talk this over with my Board of Directors, and let you know in a few days."

In the interval I made calls assiduously on everybody who might be concerned, hearing everywhere that all hookworm conversation ended merely in talk. I was, therefore, much gratified when the representative of the Estates Agents reported that the planters were willing to let the Foundation go ahead with the demonstration. I had some difficulty, however, in making clear to him that the Foundation must supervise its own expenditures. Finally, he accepted my condition that the planters pay their share.

The Governor of Ceylon, Sir Thomas Chalmers, K C B, had previously indicated that he did not want any Yankee men or Yankee methods introduced, Ceylon was capable of running its own affairs and paying for its own health work. The Estates Agents Association, however, brought its influence to bear, and in the course of a week the Governor capitulated. Letters were exchanged, and we prepared to begin operations, but, because the submarine campaign was in progress, and the Germans were constantly torpedoing boats with our supplies on them, we were delayed some months in assembling a staff.

But when finally we did get under way, as was almost inevitable, we incurred immediately the enmity of the native herb doctors, who considered we were interfering with their practice. They said we were in league with the British and were administering capsules to the coolies which would explode inside them at the end of five years, thus the Germans would find no labor when they possessed themselves of Ceylon. This rumor, which seemed so plausible to the coolies, was not easy for us to combat, especially as the War was going badly for the Allies at the moment. Our demonstrators might swallow capsules by the dozen to combat the accusation, but this constituted no proof that at the end of five years their stomachs would not explode.

For many years thymol had been used as the standard vermifuge, but owing to the War this drug became expensive and difficult to obtain. The

Dutch had already discovered the virtues inherent in oil of chenopodium and had called my attention to it. Chenopodium had the advantage of expelling all worms, even the long-lived and tenacious tapeworm, and had a ninety-one percent efficiency against hookworm as compared with thymol's eighty-three. Carbon tetrachloride, tetrachlorethylene, and hexylresorcinol are being used now.

Our first action in the Ceylon campaign was to treat thoroughly a small number of estates for hookworm. The results were amazing. Hospital attendance and charges dropped immediately, and the general death rate was soon greatly reduced. Whereas before the campaign large numbers of coolies failed to report for work, afterwards the labor turnover was reduced. The treatment was rapidly extended to other estates, and in 1921 two hundred thousand coolies were being freed of worms.

After demonstrating what we could do in the way of cure, it was time to start education in preventive measures against hookworm. The coolie lines in 1915 were not equipped with latrines. Every planter believed it futile to build any because he was convinced the Tamils could never be induced to use them. But by this time we had proved the economic value of our methods so completely that we could lay down conditions. We notified the plantation owners that we would do no more work on the estates until they had installed them.

Accordingly, the planters erected latrines and we helped to instruct the coolies in their use. An effective method of enforcing compliance was to fine a coolie a few cents for each dereliction. We had not been installing latrines for many years before a Tamil who was preparing to sign on again would ask whether the particular plantation to which it was proposed to send him was equipped with them. Districts now vary from thirty to ninety percent in installation, and their use has become an accepted part of the customs of the people.

In time the number of Tamils imported from India was reduced, because the working force on the plantations was not so depleted by sickness and death, and the women, having recovered from their anemia, began to bear children. In the end the planting interests cooperated whole-heartedly and themselves went through many a struggle on behalf of sanitation.

1873 — 1945

S. JOSEPHINE BAKER

In August 1908, the Bureau of Child Hygiene of the New York City Health Department was created, with Dr. Josephine Baker as its chief. This was the first official attempt by any government in the world to deal with the specific health problems of infancy and childhood. It was the product of Dr. Baker's thesis that

"healthy people don't die" Early in the summer of 1908, she was given an opportunity to show that an ounce of prevention is better than a pound of cure. The object of her experiment was to show that effective action could be taken to reduce the infant death rate in a congested section of New York's Lower East Side. And this Dr. Baker proved beyond a shadow of a doubt. At the end of the experiment, it was found that there were 1200 fewer deaths in that district than there had been the previous summer. Preventive medicine and public health education were still in their infancy, but Dr. Baker showed that they work.

I WAS in general practice for a number of years. But as events turned out, private practice was not to be my whole career and after fifteen years of dividing my interests, it was inevitable that it should be discarded. I was hardly well started when another accident, the mere catching sight of an item in the morning paper, diverted me into taking the first step toward my real career. The paper said that civil service examinations for the position of medical inspector of the Department of Health would be held at such a time and place, the salary to be thirty dollars a month. A dollar a day, about double my first year's rate of income. It was tempting enough to make me take the examination and I came out high enough on the passed list for a possible appointment. Ordinarily I would have supposed that this would guarantee me the job. But by this time I was vaguely aware that there was corruption in city politics and that people sometimes had to use pull to get city appointments. That really was the innocent extent of my knowledge of what I was getting into. So I asked a lawyer patient of mine to give me a letter of recommendation to a justice of the New York Supreme Court who was, of course, right in the middle of politics and the justice passed me on with another letter to one of the, then, three Commissioners of Health. R. A. Van Wyck was then the Mayor and not until the succeeding administration of Mayor Seth Low did the Department function under its present plan of one commissioner.

The Department headquarters were at that time in a forlorn old building at the corner of Sixth Avenue and Fifty-fifth Street which had formerly housed the New York Athletic Club and had obviously been neither cleaned nor painted since the athletes had vacated it. As the central focus of the sanitary and medical services of a great city, it was a shock, the Commissioner was another. I do not remember his name, but he could have sat as a cartoon for the public idea of a typical Tammany henchman. He was punchy with a fat blue-jowled face and sat with his feet on the desk, his hat on the back of his head and the last two inches of a disorganized cigar in the corner of his mouth. I had supposed he would ask me some questions but he did not deign to do that. He did not even look at me twice. He just opened my letter, glanced through it, rang a bell and, when a clerk appeared, he jerked his thumb at me over his shoulder and said "Give the lady her appointment." That was my first lesson in the ways of the world of I'll-do-you-a-favor-sometime. It was also my launching in public health work.

Inspecting school children was my first assignment and it seemed to me to be a pathetic farce. We inspectors went around to certain assigned schools and asked the teachers if any pupils showed any signs of illness. If, by chance, a teacher had noticed that a child did not seem well, we looked him over, more or less perfunctorily, and sent him home if we suspected some form of contagious disease. There was not, and could not be, any serious attempt at diagnosis. Our appointment was for one hour's work a day and in that time we had to visit three or four schools. Another inspector was sent to visit the child at home and decide whether or not he was to be excluded from school. But, in view of some later discoveries of mine, there is fairly good reason to doubt that this follow-up proved much. The only thing to recommend the whole dismal business was that it did, in a futilely primitive fashion, recognize that something might conceivably be done about controlling contagious diseases in school children.

The Gibson Girl was a great help to me when I started work in the public health field. It is difficult to realize today how curious it seemed then that a woman should hold my position. A little later, when I was assistant to Dr. Darlington, the Commissioner of Health, they made me print my name on the letterheads as "Dr. S. J. Baker" to disguise the presence of a woman in a responsible executive post. The Gibson Girl played a part in the situation because, most fortunately for me, she had persuaded me and the world in general into accepting shirtwaists and tailored suits as a conventional feminine costume. I liked the effect and still do. But its convenience came in because, if I was to be the only woman executive in the New York City Department of Health, I badly needed protective coloring. As it was, I could so dress that, when a masculine colleague of mine looked around the office in a rather critical state of mind, no feminine furbelows would catch his eye and give him an excuse to become irritated by the presence of a woman where, according to him, no woman had a right to be. My mantailored suits and shirtwaists and stiff collars and four-in-hand ties were a trifle expensive, but they more than paid their way as buffers. They were also very little trouble. I could order a suit and another dozen shirtwaists and collars with hardly a tenth of the time and energy that buying a single new frock would have required. And I had no time or energy to spare because, in the process of convincing myself that my work must be a success and equal to the best that might be done by a man in that man-made world, I invariably took home a brief case full of trouble every night and worked at it until the small hours of the morning. Dr. Mary Walker wore trousers to startle men into recognizing that a woman was demanding men's rights. I wore a standard costume—almost a uniform—because the last thing I wanted was to be conspicuously feminine when working with men. It all seems very strange now, for today women can be ultra-feminine and thus add attractiveness and charm to the work they are doing.

At home, of course, I kept a certain amount of conventional and thor-

oughly feminine attire for those rare occasions when I could allow myself a social holiday. And yet, I am sure that there are today a great number of my old-time friends who never saw me dressed in any other way, for I wore that costume in my daily work for over twenty-five years. When Commissioner Darlington gave a tea at the Plaza Hotel one day, I appeared in something rather frivolous for me. Several of the secretaries and clerks were there all dressed in their best. As I came in, I stopped for a word with two of the secretaries standing near the door. "Well, how's the party?" I asked. "Very nice," said one of them, "but to tell you the truth, doctor, we only came because we wanted to see whether you would wear a tailored suit and a stiff collar."

When they [William H. Allen, and Paul Wilson] started investigating New York's scandalous death rate, I was assigned to cooperate with them as politely as possible.

It might have been just another assignment. But in the course of their study, the Bureau turned up one set of facts that made me stop, look and listen. Of all the people who died in New York City every year, a third were children under five years of age and a fifth were babies less than a year old. It was the babies and small children who never really had a chance to live, who swelled the death rate to fantastically macabre proportions. Interesting figures beyond any doubt, perhaps they impressed me so particularly because they were not just cold statistics to me at all. I had served my time in that long, hot summer in Hell's Kitchen when I walked up and down tenement stairs to find in every house a wailing skeleton of a baby, doomed by ignorance and neglect to die needlessly. I had interviewed mother after mother too ignorant to know that precautions could be taken and too discouraged to bother taking them even when you tried to teach her. If mothers could be taught what to do, most of these squalid tragedies need never happen. The way to keep people from dying from disease, it struck me suddenly, was to keep them from falling ill. Healthy people didn't die. That sounds like a completely absurd and witless remark, but at that time it really was a startling idea, at any rate it seemed so to me. And I found that it was when I tried to convince the authorities that something might be done about teaching people how to stay well.

Preventive medicine had hardly been born yet and had no portion in public-health work. The term "Public Health Education" had not been invented. Perhaps something might be done, I was not sure but I hoped it could be tried.

The Bureau of Municipal Research group and I saw this at the same time. They had authority, I had none. And then they recommended to the Department that a division should be established to deal with the matter. Dr. Darlington and Dr. Bensen were favorable to the idea. Dr. Bensen called me in to his office one day in the early summer of 1908 to tell me I might have a try at it.

I came out of that office the proud and bewildered Chief of the newly created Division of Child Hygiene. I had no staff, I had no money, all I had was an idea. It was clear to the Commissioner that it was going to be a struggle to convince the Board of Estimate and Apportionment that money could be legally appropriated to care for well people. I could see that myself. A large part of being a successful government administrator consists of being able to keep the political powers-that-be appropriating funds for your pet projects, that is as true today as it always has been. You have to be a salesman as well as an executive. As a salesman I was going to need an impressive sample before I could get into our budget a sum large enough to pay for such experiment. It had to be more than an idea; it must be something concrete and definite if the money was to be forthcoming.

After several consultations as to how this approach might be made, I was allowed a trial experiment. The closing of schools in June would mean that the thirty-odd nurses on school inspection duty would be at liberty. June also meant the beginning of the diarrhoeal season which, if this summer of 1908 was going to be anything like its predecessors, would kill 1500 babies each week all through the hot weather. The Commissioner and Dr. Bensel let me have those nurses to use in an experiment in preventive child hygiene.

In order to make our experiment count for something, the scheme had to be tried out first in a district with a very high baby death rate. So I selected a complicated, filthy, sunless and stifling nest of tenements on the lower east side of the city. If we could accomplish anything in the face of living conditions like these, we would go far toward proving our point. This neighborhood was largely populated by recently landed Italians, willing to learn new things in a new country. Mrs. Capozzi might be puzzled to find a perfect stranger dropping in to tell her how to take care of her perfectly well baby, but there was probably as much point in learning the American way of caring for babies as there was in learning the American way of talking.

How to reach the newborn babies without any waste effort was a problem. But it was not too difficult to solve. The Registrar of Records in the Department was cooperative and each day used to send me the name and address on the birth certificate of every baby whose birth had been reported on the previous day. It was essential to reach these babies while they were still very young and this proved to be the ideal way to find them. It is still the ideal way. Within a few hours, a graduate nurse, thoroughly instructed in the way to keep a well baby well, visited the address to get acquainted with the mother and her baby and go into the last fine detail of just how that baby should be cared for. Nothing revolutionary, just insistence on breast-feeding, efficient ventilation, frequent bathing, the right kind of thin summer clothes, out-of-door airing in the little strip of park around the corner—all of it commonplace enough for the modern baby, but all of it completely new to Mrs. Capozzi and all of it new in public health. Many of these mothers were a little flattered to have an American lady take all that trouble about little Giovanni, and were

likely to go out of their way to learn and to cooperate. If the mothers were sulky or apprehensive, the nurses went again and again, wearing down their resistance, establishing friendly contact, until they were ready and willing to cooperate. In my experience, nearly all mothers are fine when they are given half a chance to know how to be. As soon as they saw that their babies were flourishing, despite the cruelly hot weather, they became our most efficient aides.

From the first I was pretty sure that we were getting results. I was not prepared, however, for the impressiveness of the facts when the results of the summer's campaign in that corner of the east side were tabulated. During that summer there were 1200 fewer deaths in that district than there had been the previous summer, we had saved more babies than there were men in a regiment of soldiers and I had learned one certain thing: heat did not necessarily kill babies. Everywhere else in town the summer death rate of babies had been quite as bad as ever. We had found out how to have babies on a large scale. But it was far more important that we had proved that prevention paid far beyond our wildest hopes. There, if we have to be dramatic about it, was the actual beginning of my life work.

Early in August the Department officially created the Division of Child Hygiene with me as its Chief. Money came from the Board of Estimate and Apportionment in fairly generous amounts. It did very nicely as a beginning. Before I left the Department, however, our annual appropriation was well over twelve hundred thousand dollars a year. The first Bureau of Child Hygiene in the world was on its way.

1886—

CAREY P McCORD

Three decades ago the field of industrial medicine was still *terra incognita* to the medical profession of the United States. Indifference to and ignorance of workers' diseases often went hand in hand with scorn of those few doctors who did align themselves with industry to protect the health of the worker. Nevertheless, Dr. McCord "without any martyrdom" gaily accepted the badge of professional degradation. In 1919, he became an industrial physician. In his autobiographical volume, *A Blind Hog's Acorns*, he leads the reader on a beguiling tour through twenty-five years of industrial hygiene. This pleasant and breezy autobiography travels a bizarre gamut of occupations and their effects on health, and the telling is generously interlarded with asides on the curious mental and emotional quirks of the human animal. At times the experiences related by Dr. McCord are hilariously comical, others are more somber. Dr. McCord has spent a lifetime in the investigation of occupational disease, and he is well aware of the potentialities of industrial hygiene for the prevention and control of such conditions. Throughout his story, he stresses this point, sometimes directly, more often by implication, through experiences that are not easily forgotten.

TO THE way of thinking of many physicians, professionally one may be in only four places—at the bedside, in the consultation room, in the hospital, at the academy of medicine. With a fair degree of tolerance these physicians accept the insurance doctor, the ship's physician, the medical public health officer, the medical teacher and the military surgeon, but rarely are they taken to the profession's bosom. Their enterprises are regarded as rather unfortunate happenings, though not entirely deplorable. In early days, more of ire than tolerance was held for physicians who aligned themselves with industry for the purposes of the protection of the health of workers and who called themselves "industrial physicians." Privately such physicians were sometimes labeled "renegades," "degenerates." For use in public there was created the disapprobative term "contract physician." This term had a little nastiness in it and could be used in public with just the proper inflection to indicate that much more might be said on the subject did not courtesy intervene. In those days to enter the field of industrial health conservation carried with it the penalty of being shorn of a few of the outer garments of medical respectability.

To a few of us, however, there was given the boon of prescience—the foresight of the country's tremendous industrial expansion, the concurrent rise in occupational diseases. So girdled, the sneering of the majority was not minded. The zealot never minds.

In 1919 industrial medicine was no "Field of the Cloth of Gold." It was a field of anathema. Quite without any martyrdom, I gaily accepted the badge of professional degradation. In 1919 I became an industrial physician.

The plane company proved to be as accommodating as the physicians and the photographers. A pretense was made of charging for plane travel, but when the settlement time came at the end of the trips an astonishing bill of only \$6.25 was laid before me. The desire is to name this chicle transportation company, but because of happenings on one flight this name must remain undisclosed. The company might be offended.

After many days of preparation the time came for taking off. There I was in a wide sombrero hat, high boots, heavy riding pants, to none of which I was accustomed. When I first saw the plane, which had been brought in for my special transportation—there were no other "pay" passengers—all courage left me. If there had been no skeptical gallery to see me off, then and there the journey would have ended. Very clearly I recognized that I was out of my element, in a primitive land, facing a tiny and decrepit plane with a pilot of dubious flying experience. Never did I so long for my own lares and penates. Heartily I wished that either the pilot or I might have a sudden heart attack, or that the plane might catch fire or collapse. My one hundred and ninety pounds and six feet two seemed completely to fill the makeshift cargo pit, but in fear I shrank to smaller size when I found we were transporting

a load of explosive oxyacetylene gases for the purpose of repairing a plane that had crashed on the previous day. In the seatless cabin were two nondescript natives going along to do the welding on the wrecked plane. They proved to be handy a few hours later on our own plane.

All of my preparation might forecast a plane journey of ten thousand miles. Scorning four-flushing, I abandon any such pretense. In the jungle two hundred miles is a long distance—two or even three weeks by mule pack. This was the extent of our journey. In a few hours Carlos, the pilot, who professed to speak no word of English pointed downward to a little village at the jungle's edge. Then with his finger he indicated our prospective descent there.

I made signs inquiring, "Where is the landing field?"

Carlos pointed to a widened earthen road. One of the native welders who spoke a little English said that a stiff wind was blowing directly across the line of our landing and that the landing would be "rough." Also he translated a remark of the pilot, "my sweetheart is down there and I am thinking of her." This becomes important in the light of what happened one minute later. The maneuver of the pilot in descending was physiologically devastating—he merely corkscrewed.

Having been warned that the landing would be rough, I closed my eyes. Carlos, apart from thinking of his sweetheart, was perhaps only remembering that on that field he usually landed with chicle loads of about four times the rated maximum capacity of the plane. Apparently this was the sort of landing that Carlos scheduled. We touched the ground, then there began a series of crashes, slashes, tears, rents. I, with my eyes still closed, was only thinking, "This is worse than promised." Then all was quiet and I opened my eyes. We were in the tree tops—in truth very small trees, one wing was gone, no landing gear was left, and the propeller blades looked like bent spoons. On our various ups and downs we had gone through the stone wall of a nearby native cemetery, which seemed appropriate.

The pilot, true to his profession, first thought of his passenger and miraculously spoke in English—this for the first time—saying, "Now we are safe. The danger is over."

I trying to be composed and nonchalant, said, "This is the way I always prefer to land."

Then the pilot passed out—not dead—only fainted.

1883—

WILLIAM CARLOS WILLIAMS

William Carlos Williams was born in Rutherford, New Jersey, in 1883, nine years before Walt Whitman died in Camden, not far away. Bred in suburban Rutherford, it was a casual choice rather than a specific vocation that led him to study medicine. Williams studied at the University of Pennsylvania and graduated from medical

school in 1906. For a while he thought of specializing in surgery, but this idea was given up in the face of a more engrossing study—literature. Apparently, he decided that the practice of medicine could provide the living necessary for the pursuit of literature. At any rate, the delightful monologue *Le Médecin Malgré Lui*, written in 1915, indicates that Dr. Williams envisaged the possibility of a division of allegiance between the two disciplines. However, in the thirty years since this poem was written, he has practiced in Rutherford, and has become Chief Pediatrician at the Passaic General Hospital.

But while Dr. Williams has been ministering to the needs of his working-class patients, he has been emerging to an ever greater extent as the American poet of our time. His poetry has been dedicated to a search for "the American grain," and in the long poem *Paterson*, of which the first part has recently been published, he has achieved his most symbolic expression of an American myth.

Le Médecin Malgré Lui

Oh I suppose I should
wash the walls of my office
polish the rust from
my instruments and keep them
definitely in order
build shelves in the laboratory
empty out the old stains
clean the bottles
and refill them, buy
another lens, put
my journals on edge instead of
letting them lie flat
in heaps—then begin
ten years back and
gradually
read them to date
cataloguing important
articles for ready reference
I suppose I should
read the new books
If to this I added
a bill at the tailor's
and at the cleaner's
grew a decent beard
and cultivated a look
of importance—
Who can tell? I might be
a credit to my Lady Happiness
and never think anything
but a white thought!

V

SCIENTIST, SCHOLAR, TEACHER

He who looks back to the old
and knows the new
Is worthy to be a scholar

Chinese Proverb

An earlier generation blazes the trail
On which a later generation travels

Chinese Proverb

GIROLAMO CARDANO

By his own admission Cardano was suspicious, irascible, scheming and devious, and his standing among his fellow-practitioners was not helped by his publication in 1536 of a book entitled *The Bad Practice of Healing among Modern Doctors*. This book has the merit, however, of containing one of the earliest accounts of typhus fever. Cardano was aware of the classic past, but he was not completely fettered by it. During his own lifetime, his fame extended far beyond the confines of his native country, and as Lynn Thorndike and James Eckman have shown, Cardano exerted considerable influence on the scientific and philosophic thought of the sixteenth century. The traditional background of the period was still scholastic, and this is nowhere better illustrated than in Cardano's account of his disagreement with Branda Porro, of Milan, during an informal debate.

AT BOLOGNA, I almost always lectured extemporaneously. On this account, the scholars who should have disputed with me did not dare to face me. A three-day disputation with Camuzio was arranged at Pavia, it was to be held in the presence of the Senate. On the first day after I had developed my first proposition, he was already silenced, even my rivals who were present testified to this. Will one some day read of this event in graven letters on the monuments to Camuzio? "This then was truly known to all, that he was conquered not by argument, but by an oratorical power which appeared irresistible." And the memory of that debate lives, I believe, to this day. Branda, who was, as I have stated, my teacher, attributed the victory to my knowledge and talent, my rivals to the Devil's help, while others conjecturing more accurately ascribed it to superior and more perfect reasoning. Neither at Milan, Pavia, or Bologna, nor in France or Germany, have I found in the past twenty-three years a man who was able successfully to dispute with me. I do not want to boast of this, for I believe that had I been a stone, things would have been no different. It is no tribute to my own nature and mind, but is a result only of the lack of clarity and of the ignorance of those who would challenge me. When the cuttlefish ejects the shadows of its inky humor about the dolphin and forces it to flee, it is not counted glorious, but merely a consequence of having been born a cuttlefish.

Not only have I always distinguished myself by my ability to speak extemporaneously, but I have also instructed others therein. Outstanding though I was able to appear in these respects, I possessed neither grace in my speech nor ability to conclude cleverly. Consequently, whatever unusual endowment I had on the one hand, was balanced by a lack in some other respect. Nevertheless, in disputation I was so skilled and keen that everyone marveled, and avoided challenging me. As a result, I was able to live for a long time free from the vexation of debate, but no longer than the time when my opponents unexpectedly experienced two examples of my ability. The

first was at Pavia Branda Porro, formerly my teacher in philosophy, had intervened in an ordinary debate on philosophy that I was holding with Canunzio As I have said, my opponents often dragged me into this field, because they realized that in the field of medicine there was no glory to be had in opposing me Branda was citing Aristotle as an authority, and when he had quoted the text, I said "Take care, there is a *non* after *album*, so that the sentence actually contradicts your proof" Thereupon, Branda exclaimed loudly, "That cannot be!" Clearing my throat of the phlegm which constantly collected therein, I calmly maintained my opposition, until Branda angrily sent for the codex At my request he hand it to me, and I read the text as it was contained therein But Branda, suspecting that I wanted to practice a deception, snatched the book from my hands, shouting that I wished to deceive the audience, and began himself to read As he came to the word in question, he read it, and fell silent Amazement seized all who were present, and all eyes were turned on me in wonder

My enemies took care that I (the one of whom his native land, his family, the Senate, the medical associations of Milan and Pavia, the faculty, and finally his pupils should have been ashamed) should be invited to enter the Accademia degli Affidati, to which belonged numerous outstanding theologians, two cardinals, as was rumored, and two princes, the Duke of Mantua and the Marquis of Pescara But when they saw that I was not desirous of being thus drawn in, they sought with threats to make me comply with their wishes What was I to do, still shocked as I was by the frightful end of my son? I had already experienced every kind of adversity, and so I finally gave in, particularly because I would be freed from lecturing in the Accademia on certain days At that time I had not yet discerned the nature of this cunning plan, I did not know why they should now want to receive into their midst one whom only less than two weeks before the powers had wanted to proscribe as the spouse of all the boys, O, God's faith! O, inhuman hearts of men! O bitter fate, to be a friend of criminals and traitors! O, shameless cruelty, more malignant, than any serpent brood! What happened then? When for the first time I entered the Accademia, I noticed a beam so placed that it would be easy for it to fall and apparently kill accidentally anyone entering heedlessly I know not whether this was done by chance or on purpose At any rate, I came as seldom as possible to the Accademia, inventing some sort of excuse, or I appeared unexpectedly or unseasonably Diligently, I watched the aforementioned mouse trap, but nothing happened Either they deemed it unwise to commit the crime so publicly, or nothing at all had been devised Something of the sort was probably in the wind, for when a few days later I was called to the sick son of the surgeon, Pietro Marco Trono, they had hoisted a piece of lead over the doorway, apparently as a device for holding back the reed-curtain How this was done, or in what manner it was attached so that it would fall, I do not know But it did fall, and had it

struck me, all would have been over for me. God knows how close was my escape! Since then I began to feel vaguely apprehensive, not knowing precisely what I had to fear.

Thus I lived in constant fear and excitement until I left my country. Immediately after my departure, the Senate elected that sly fox to be my successor. And he danced with joy because he had achieved his goal. But alas for mortal hopes! He had lectured only three or four times when a disease attacked him. As I learned, it lasted about three months, and he died. Delfino died that same year and Fioravanti shortly thereafter. And the same fate overtook a like number of physicians, even though somewhat later, who at Bologna had forged plans against me. Thus, all who sought my life, perished. If God would have permitted it, my enemies would have repaid me, who have been afflicted by so many calamities, in their own fashion for the benefits which I have so unremittingly bestowed on mankind. I had learned, however, to keep at a distance from such things, profiting from the fate of my uncle, Paolo, who died of poison, and that of my father who had twice drunk poison, and who although he ultimately escaped, lost all his teeth as a result.

1747 — 1828?

LEONHARD LUDWIG FINKE

Interest in the relation of geographic factors to health and disease goes back to antiquity. Yet, it was not until the end of the eighteenth century that Leonhard Ludwig Finke produced the first medical geography. Finke, the son of a clergyman, was born in 1747 at Westerkappeln in Germany. He matriculated as a medical student at the University of Halle in 1769, and obtained his doctorate in 1772. Thereafter, Finke established himself as a practicing physician. While practicing in Kassel, he became interested in obstetrics, and from 1774 on devoted his attention to this branch of medicine. Probably as a result of this development, he was appointed in 1776 as medical officer and instructor to midwives in the county of Tecklenburg. In 1802, he was appointed to a similar position in Westphalia, where he remained until his death in 1828 (or 1829, the date is not certain).

Finke relates that the first idea for his book came to him in 1780 when he was preparing an inaugural address. This information is contained in the preface to the first volume of the geography. In it he gives a moving account of the intellectual and material tribulations that he experienced in preparing his book.

IFIRST conceived the idea for the present work in 1780, when I prepared my inaugural address *De utili quidem, sed admodum limitanda medicina populari* [On the Utility as well as the Limitations of Popular Medicine]. But during the first few years of my presence here, my career, upon which I had recently entered and which was connected with various annoyances, did not permit me to give any further thought to this matter. It would have

vanished completely from my memory had I not been obliged in 1784, on the occasion of my leaving the office of Prorektor, to prepare a new address. The chosen subject, *De admiranda naturae simplicitate* [On Admiring the Simplicity of Nature] not only brought me back imperceptibly to those first ideas, but also expanded them to such a degree that in the very same year I resolved to write something *on the indigenous medicine of different peoples*, and in fact I actually began to do so in 1784, as may be seen from the preface to my *Exercitationes physico-medicae* [Physico-medical Exercises], which were published at Rinteln in 1785. During the first years, however, progress was very slight, and often weeks, even months, passed without quill having been put to paper. In part this was due to professional affairs, in part, however, and this was the great obstacle, to the circumstance that I was unable to decide on the plan and arrangement of the work. It was not until 1786 that I felt that I had gained a firm footing, and from this time on I carried on the work with the greatest zeal. Indeed, in 1789 I actually believed that I was finished with it, and in the same year I even announced the book to the learned world by means of an extensive plan which I appended to a small dissertation, *Von dem verschiedenen Verfahren der Völker bey Kranken, Sterbenden und Gestorbenen* [On the Different Conduct of Nations towards the Sick, the Dying and the Dead].

In order not to make the work too costly, I had omitted all citations from my first manuscript. I was about to give it to the printer, when I received a kind letter from Prof. Meiners in Göttingen in which he told me that in a historical work one would regret keenly the absence of the utilized sources and the citation of passages. I regarded this objection as well-founded, and from that moment decided to remove this defect from the book. Hardly had I started this task, when my horizon expanded once more. As my first sketch had dealt only with the indigenous diseases and the customary native methods of treatment, considerable deficiencies could not be avoided. There was no connection between cause and effect. One saw a country ravaged by diseases, without really seeing the people using cures, without having any real knowledge of the country and its diseases. I became very displeased with my own work — Now I began to work on the basis of the plan which the book has at present. For this purpose materials had to be collected once more. In 1790 I felt that I was sufficiently supplied, and the book was completely revised. This task was completed in 1791. I was very happy on that account, but my joy was of short duration. For I had forgotten to mention almost all the mineral waters, the medical products carried in the apothecary shops, the wines in each locality, and the places of refuge in time of need, and this would have been a great defect in a medical geography. Consequently, I inserted this information, even though incompletely, in each place. Now I carefully read through my manuscript, and after very exact examination found that the most appropriate wording had not always been employed, something which is almost unavoidable in a work such as this that contains so many

scattered pieces of information. Consequently, the respect which one must have for the public led me to clothe my book in a more elegant dress. I was just thinking of having a fair copy made of the entire work when two extremely adverse events occurred which thwarted my intention and accelerated the publication of this book by almost an entire year. The first was a fire that broke out in a neighboring house, and would also indubitably have reduced my house to ashes had not the most suitable measures been taken. However, within half an hour through the kind assistance of many sympathetic people and friends my entire house was emptied, including also my library and many of my manuscripts. The books suffered greatly, and among my manuscripts divers things were lost. Thus, I found myself compelled, first of all, to replace what had been lost. Hardly had I repaired the damage when a violent breast and bilious fever forced me to take to my bed. Fortunately I also recovered from this, and found that my courage to revise my book had not lessened, but when I proceeded to the task I found that my health had suffered all the more. But as I did not wish my labor of many years and the considerable costs to have been expended in vain, I had to remain satisfied with correcting the manuscript.

1792 — 1876

KARL ERNST VON BAER

Von Baer won his greatest fame as a scientist with the embryological works that he wrote in his youth. The most important of the discoveries that he made in this field—the egg of mammals in the ovary—was published in 1827. In his autobiography von Baer gives a graphic account of how he made this discovery. At the same time, he also makes it abundantly clear that a scientist does not operate in a vacuum, that he must be aware of what his predecessors have done and what his contemporaries are doing, and for this he needs a good library. That the official acquisition of books happened to coincide with von Baer's bibliophilic tendency was probably not an accident.

ON SEVERAL occasions in 1826 I had already found in the horns of the uterus and in the tubes themselves small transparent eggs about $\frac{1}{2}$ to $1\frac{1}{2}$ lines in diameter, such as *Prévost* and *Dumas* had observed, but in the spring of 1827 I found some that were considerably smaller, much less transparent, and therefore recognizable in the tubes. I did not doubt that these were also eggs, as it seemed more probable that among mammals too the yolk mass would originally be opaque. In April or at the beginning of May during the latter year I discussed this matter with *Burdach*, telling him I no longer had any doubt that the mammalian egg came completely formed from the ovary, and that I was very desirous of obtaining a bitch that had been in heat for only a few days. According to the observations of *Prévost* and *Dumas* one was

compelled to believe that in dogs in this condition the Graafian follicles would be found closed, but ripe for opening. It was believed at that time that the opening of the capsule or of the Graafian follicle was directly dependent upon copulation, which is not correct. By chance *Burdach* had such a bitch in his house. The animal was sacrificed. When I opened it I found several ruptured Graafian follicles, but none that appeared ready to burst. Disappointed that my hopes had again not been fulfilled, I was examining the ovary when I noticed a yellow speck in a follicle, then in several others, indeed in most of them, and always only a speck. Strange! I thought, what can this be? I opened a follicle and with the knife carefully removed the speck into a watchglass filled with water which I placed under a microscope. Upon glancing into it, I recoiled, thunderstruck, then I saw clearly a very small, sharply defined yellow yolk. I had to relax, as I was worried that a phantom had deceived me. It seems strange indeed that a sight which one expects and desires can frighten one when it appears. To be sure there was something unexpected about it. I had not thought that the content of the mammalian egg would be so similar to the yolk of birds. As I had used a simple microscope with a triple lens, the magnification was moderate and the yellow color remained recognizable, with greater magnification and illumination from below it would have appeared black. What startled me to such an extent was the circumstance that I saw before me a sharply defined, regular sphere differing from an egg yolk only through the tough, somewhat projecting outer membrane. The opaque little eggs that I had found in the oviduct had also exhibited a yellowish white color, undoubtedly because the yolk was already in a state of dissolution, the larger ones were transparent. Several more intact yolk spheres were removed, and all of them were also examined by *Burdach* who had joined me.

The primordial egg of the dog was thus discovered.

As the debts that I had made for Wurzburg had been paid with my mother's legacy, it seemed to me that my financial condition was now such that I could give way to my desire to possess good books. During the first years I had acquired, with true hardship and severe deprivation, several absolutely indispensable books that I used daily, such as Meckel's Anatomy in four volumes and similar works. Aside from the anatomical books, it was only those that were most indispensable for the systematic determination of the animals that were brought in, which I was unable to obtain nor did I care to do so. In this field the university library was exceptionally poor. When I recommended the acquisition of several books, I received the rather well-intentioned reply that an instructor [*Privatdozent*] did not have the right to suggest books to be bought by the library. A strange situation indeed! No one is more avid for intellectual nutriment, as a rule no one is better informed as to contemporary needs and production than the instructor who has not yet become involved in extensive detailed investigations, and yet no one has

fewer means for the acquisition of the needed books—and it is just the instructor who is not to have the right to indicate his needs. After I became extraordinary professor I was permitted to suggest purchases from auction catalogues. However, these proposals were reviewed by the library. In one such catalogue, I found offered the twelfth edition of Linné's *Systema naturae*, the last one that he edited. I ordered it together with other books. It was removed from the list, however, because an earlier edition, the tenth or even the eighth, was already in the library. As the minister at this time, Stein von Altenstein, was himself a scientist, I used this circumstance to inform him of the state of the library, and to point out that without more considerable means it would be quite impossible to carry out his intention of founding a zoological museum in Königsberg. Thereupon, the minister approved an extraordinary appropriation of 1000 Thalers for the library, and the expenditure was left to my discretion. In fact I had always had to ask old Professor Hagen to use his private library, which was also somewhat aged. Without the extra appropriation almost every zoological identification would have been impossible. Because of the acquisition of several larger scientific journals, such as the *Linnean Transactions*, the appropriation soon melted away. Professor Vater, the chief librarian, had previously explained to me in an official *Exposé* that the purchase of books on natural history should be a moderate one, for the library staff had made up an approximate estimate of the way in which the annual appropriation was to be divided among the chief subjects. They had assigned 200 Thalers for the subject of medicine, and as natural history is only a premedical science only about 50 Thalers could be set aside for it. These 50 Thalers for zoology, botany and mineralogy seemed so pathetic to me that I wanted to avoid as much as possible the public library and the contempt of the philologists. Consequently, when I drew up the budget for the zoological museum I also included a small sum for the purchase of books, and this budget was approved. As soon as I myself, however, had greater means at my disposal, I endeavored diligently to acquire good books for myself, rather more for zoology than for anatomy, as the library of the Anatomical Institute was large and grew daily. Thus, when I assumed the office of Prorector the entire remuneration was set aside for my own library, which grew significantly on 300 Thalers when all the auctions were exploited. Bibliophily, however, is a very good illustration for the proverb *l'appetit vient en mangeant*. This appetite is never stilled, and the effect of experiences such as I have related is short-lived. As I did not succumb to the last stage of this disease, in which rarities are sought without regard for their utility, I collected a fine library, by the time I finally left Königsberg in 1834. Thus, although entomology was not the field in which I collected particularly, yet I owned Réaumur's *Mémoires pour servir à l'histoire des insectes*, Rosel's *Insectenbelustigungen* with the continuation by Kleemann, de Geer's *Memoirs translated by Goze*, Panzer's *fauna insect Germ* etc. Huber's *Fournilles*, Kirby and Spence's *Entomology*, Jablonsky's *Natural System of the Insects*, all the

works of Fabricius, Meyen, Schaffer, Swammerdam's *historia insect*, apart from the *Bibl natun* and many smaller works On fishes I had not only the complete works of Artedi but also the large edition of Bloch on native and foreign fishes, Klein, Gronov, Gouan, Lacepède, Meidinger, Nilsson, Faber, and of older works Rondelet, Salviani, and Gessner My collection of the literature on the intestinal worms was so complete that hardly one of the very old (now rather useless) works was missing

1762 — 1829

NATHAN SMITH

In his efforts to advance the cause of medical education and to establish the Medical School at Dartmouth, Nathan Smith applied personally to the New Hampshire legislature for an appropriation to build a suitable home for the medical school In 1809, the sum of \$3450 was granted, with the condition that he should "give a site for it and assign to the State his Anatomical Museum and Chemical Apparatus" Dr Smith gave the site in 1810, and on it a brick building was erected, containing two large lecture rooms, a library, a chemical laboratory and museums Later he attempted to have an Anatomy Act passed, and to this he refers in the first of the two letters printed below The second letter, written towards the end of his career, gives an excellent summary of his achievement

Hanover, May 14, 1810

Dear Sir

I have at length determined to leave Hanover, but at present have not concluded on any certain place for future residence The political parties are so very jealous of each other in this State and so near a balance that I have nothing to expect from either, as some ignorant persons might be offended at any grant or assistance voted by the Legislature to promote what they term the 'cutting up of dead bodies' None will choose to advocate the measure, and I expect they will, if not deemed too unconstitutional, revoke the grant made for that purpose last year (for the erection of the medical building), and, if that can not be effected, they will enact laws which will inflict corporal punishment on any person who is concerned in digging (?) or dissecting If the thing should take this course it will afford me a good pretext for leaving the College and State,—a thing which will not be disagreeable to me The proposal I made the State of giving land and the whole of my museum and apparatus was too much to give, but while engaged in promoting the school in this place I felt willing to go all lengths in sacrificing on the Esculapean altar, but the conduct of people and parties has cooled my ardor for laboring in my avocation in this place and determined me to sell my talents in physic and surgery to the highest bidder

I shall attend the medical meeting at Exeter on the last Wednesday in this month and shall go from thence to Boston thro' Newbury and Salem I pro-

pose to spend a week or two in Boston and shall then have an opportunity to converse with you on all subjects

I am in haste,

Your Friend and Servant, Nathan Smith

Hanover, Monday, May 14, 1810

P S—You will not at present mention publicly my intention to remove from this place

[Brunswick, April 18, 1823]

(To Dr George C Shattuck)

Our course of lectures go on very well and I believe will be very satisfactory to the class, which is without exception the best class of medical students I have seen together

I have written out a treatise on Typhus Fever and Mr Bell is copying it for the press I shall also, before I leave this, finish a book on Surgery which will contain about two hundred pages, which I shall publish in the course of the present year

Dr Wells gives a very good course on Anatomy and is popular with the class I think the school is now established The next year will decide the fate of the school at Burlington We made a very good beginning last year, and if no untoward circumstance occurs I think it will live I think the four schools which I have been concerned in bringing forward in addition (to Harvard), will be as much as New England will bear, and I think there will not be too many Every State should have one medical school and no more A medical school does more towards ameliorating the condition of mankind than any other institution, as the knowledge acquired in them is of more practical importance

Professor Wells and Mr Bell send their best respects to you and your family

I am, with great esteem,

Your friend and Humble Servant,
NATHAN SMITH

1809—1885

JACOB HENLE

Jacob Henle was one of the most significant medical scientists of the last century, a man who deserves to rank high in the history of medicine not only for his anatomical and pathological discoveries, but equally so because as a teacher his brilliant, scintillating mind stimulated students to fruitful thought and research Henle was born in 1809, at Furth, near Nurnberg, as the son of a Jewish merchant In 1815 his family moved to Mainz, and later to Koblenz In the latter city, Henle met Johannes Muller, then professor at Bonn This acquaintance, which later ripened into intimate friendship, was to have a decisive influence on Henle's career

He began his university studies at Heidelberg, but in the fall of 1827 he transferred to Bonn. At Bonn, Henle resumed friendly relations with his old acquaintance Johannes Muller, and was thus drawn into the new scientific research which was then arising in Germany. In 1832 Henle completed his studies at Bonn and was licensed to practice medicine. When Muller was appointed to the chair of anatomy and physiology at Berlin, Henle immediately entered his laboratory where he worked until 1840. In 1835, Henle was arrested for having been as a student a member of a society devoted to the idea of political freedom. He was imprisoned for six weeks, but in 1837 he was pardoned. Despite this interruption of his scientific activity, Henle made the most of his opportunities and carried on extraordinarily fruitful researches in anatomy, zoology and pathology. In 1840 he received a call to occupy the chair of anatomy at Zurich, the same year saw the publication of his important essay "On Miasmata and Contagia," in which on the basis of deductive considerations he formulated the firm conviction that living organisms are the cause of communicable diseases. (It was not until thirty years later, however, that one of his students, Robert Koch, provided definitive proof that his theory was correct.)

Henle remained at Zurich until 1844, when he received an appointment as professor of anatomy at Heidelberg. He soon became the idol of the Heidelberg student body. Henle's academic and political past was well known, and contributed no little to endear him to the students.

As a result of the reaction which followed the defeat of the revolution of 1848, Henle was forced to leave Heidelberg, and in 1852 he became professor of anatomy at Gottingen. Until his death in 1885, he remained at Gottingen, occupied with his anatomical researches.

In 1831 Henle had accompanied Muller on a trip to Paris, where the latter wished to study the work of the French scientists. During this visit Muller invited several distinguished Frenchmen to witness a demonstration of his scientific work. Alexander von Humboldt, then in Paris, was also invited. Henle, who assisted at these experiments, has left us this amusing report of the occasion:

HERR HUMBOLDT has just left again, *bien satisfait des jolis manoeuvres*, which we had the honor of presenting to him. He was also delighted to meet me, which is probably only idle talk, and told me about the marriage of some young man whom I do not know, whereupon I manifested an inhuman joy. At the end he left 5 francs lying here, which were probably supposed to be a tip for me. However, I proudly returned them to him, and for this I received my handkerchief which he had put in his pocket by mistake. He brought several other excellent scientists with him, all of whom I now know personally, a fact about which I won't even brag a little in Bonn.

You should have seen how we arranged our poor room to receive the noble guests. First we placed everything in the nicest order. But then we found that here we had a worn spot on a chair, and there a rip in the tablecloth had to be covered with a book, so that we finally decided for a system of charming disorder, and preferred to appear careless rather than poor. We could probably have arranged it otherwise if dear Mother had announced that she would

visit us The Minister was placed in an armchair upholstered in red flowered velvet, the other gentlemen had similar chairs, but these were filled with springs, so that in accordance with their dignity they sank somewhat deeper into them Muller and I camped on two chairs, which between them had seven legs We were both dressed completely in black, including our linen, as our *femme blanchisseuse* had *perfidement* left us in the lurch

1818 — 1896

EMIL DU BOIS-REYMOND

AND

KARL LUDWIG

1816 — 1895

Of the outstanding physiologists of the last century, Karl Ludwig was the greatest teacher, and one who unquestionably exerted a most fruitful influence Ludwig was born in 1816 at Witzenhausen, on the Weser, near Cassel After completion of the gymnasium in Hanau, he attended the University of Marburg, where he received his medical degree in 1839 In 1842 he obtained the right to teach, with a thesis on the mechanism of kidney function In 1847 he became professor at Marburg, and worked there until 1849, when he received an appointment as professor of anatomy and physiology at Zurich

Throughout most of his life, Ludwig was closely linked by ties of friendship to Emil du Bois-Reymond, with whom he probably became acquainted in 1847 in the course of a visit to Berlin Du Bois-Reymond, likewise distinguished as a physiologist, was born in Berlin in 1818 (It is interesting to note that his great-grandfather was Daniel Chodowiecki, the graphic artist) His parents were of Swiss-French extraction, but as his father was a Prussian official, he developed into an intense German patriot Du Bois-Reymond studied medicine at the University of Berlin and became a pupil of Johannes Muller In 1858 he became Muller's successor as professor of physiology, and held this post until his death in 1896 Du Bois-Reymond was not a great teacher in the sense of having a large circle of pupils (like his teacher, Johannes Muller, or his friend, Karl Ludwig), but he was an eloquent lecturer On this point, we have the testimony of several of his auditors (see page 99) In his scientific work, he devoted himself chiefly to studying electric currents in the nervous and muscular systems of the living body

While Du Bois-Reymond remained in Berlin, Ludwig's career was more peripatetic From Zurich he went to Vienna in 1855, and thence to Leipzig in 1865, where his physiological laboratory, built in 1869, became a world-famous research institute, to which flocked students from all over the world Among them were some of the most eminent men in the history of American medicine—Henry P Bowditch, Charles S Minot, William H Welch, Franklin P Mall—and through them Ludwig exerted an important influence on American medicine

The degree to which the careers of these friends were intertwined may best

be seen from their correspondence. Constant exchange of scientific data, discussion of projected publications, efforts to spread each others' results among other interested scientists, differences of opinion, academic intrigues behind the scenes—all this and much else may be found in the letters that these two friends exchanged from 1847 to 1894. The following selections from this correspondence are representative.

Du Bois-Reymond to Ludwig

Berlin, 16 February, 1849

From Halske I learn that Siemens in Marburg would like to have me come there if at all possible, as I could make my fortune there. A position is open for me, but Bunsen is prejudiced against me, allegedly because I do not know how to experiment, and Siemens feels that I should endeavor to refute this by personal contact. It is obvious, however, that I cannot come, as I dare not leave my work for a moment nor have I a single farthing with which to leave it. Nevertheless, there are various things that could be arranged by letter, and in any case, shouldn't some agreement as to what the dispute is about precede such a trip? You would make me happy, if you would lift the veil from these mysteries. I am puzzled by Bunsen's opinion that I do not know how to experiment. On the basis of the opinions that have been expressed concerning myself, as well as on the basis of my observations of others, I believe I may say without appearing immodest that I *do* know how to experiment, indeed that is what I understand best of all. Besides, you yourself have seen me at work and have paid me compliments so that you can set Bunsen right. But enough of this. As a result of this annoying situation I am in a very irritable mood. I cannot reconcile myself to the thought that my future, as I have so long imagined it (or, to express it in the style of the Imperial and Royal Chancellery, as I envisioned it), should now be destroyed, and yet I must reconcile myself to it. And this riff-raff which spouted such fine promises as long as it was a matter of encouraging me to carry on disinterested work and to hope for this trip, now gives one good advice for the journey!

Ludwig to du Bois-Reymond

Marburg, 20 February, 1849

After having made the decision which I had to make as a result of your last letter, and which I actually made immediately, I wrote you a letter that came from the bottom of my heart and was imbued with the sincere and affectionate feeling that I have for you. Today I received another letter from you which as I hoped was an answer to mine, but how painfully was I disappointed. Your agitation took hold of me so that for an entire hour I was unable to read beyond the first few lines. I had hoped that you would be calmer, after having firmly resolved to go to Königsberg—a decision whose difficulty and magnitude I completely understand. It was only with difficulty that I succeeded in replying to you immediately in a calm, and I might even say jocular, mood.

Under the new ministry we had requested a reorganization of the scientific departments, and Bunsen, Sybel, Gildemeister, and I had received a commission to look about for professors of physics, botany and mineralogy I proposed you constantly but found little response, because at that time your book had not yet appeared, and Bunsen accordingly did not take too seriously a physiologist as physicist When your book was brought from Berlin and I showed it to him, he had to recognize your qualifications in physics, and he repeatedly remarked, How was it possible for a physiologist to acquire such a knowledge of physics Thus, it is understandable that he now adopted the view that you are deeply versed in one subject but have only a superficial knowledge of others To demolish this last resistance I took advantage of the presence of Siemens, who seems to have pleased him, and brought the conversation around to you, and as I had expected Siemens spoke of you in the very highest terms Now our stubborn friend Bunsen no longer denies your virtues, but is more inclined to favor Knoblauch than you—that's the name of the heat man [Warmemann] who always appears to be freezing I was certain that your presence in Marburg, which would have been the greatest pleasure for me, would have sufficed to overcome the last lingering doubts, and so *sub rosa* I asked Siemens to engineer your journey As soon as I heard about Königsberg I let the plan drop because quite apart from all this it could not have been carried out this year, as our budget has a deficit this year This then is the situation There is no catch in it, and should you actually visit me for a few days, you would certainly take a fancy to Bunsen, just as he would to you

But now be of good cheer Everyone has his time of trial, and fortunate is he who can get it over with in his youth I wish that I could give you my courage for renunciation, which I acquired rather easily because I was never able to have great hopes and claims You would have to live in our divine state to attain my mental condition of resignation and stable equilibrium How wonderful does it appear to me that where you are, people lay great weight on a scientific reputation Here they esteem only those who are jolly and practical, and people such as I are paid off with the sneering epithet, dog knacker [Hundeschinder], and prior to the overthrow of last year were even accused of immoral activities You must and you will find your place for free activity in science, and in a few weeks or years when the seeds of culture, which these storms have sown, begin to sprout, your activity will again be celebrated, so that you need no longer reproach yourself for being a cowardly murderer of toothless and clawless animals

During the past days my endosmosis work has made progress, it will soon be in your hands in printed form You will be delighted because I have found several new bases for Brucke's theory

Regards to Helmholtz and remain my good and best friend If only I could console you, but it seems comical to me that with my weak limbs I should support a stout man like you Always remain dignified, self-confident,

and modest, and you will be helped Farewell and accept my loyal sentiments with an open heart

Du Bois-Reymond to Ludwig

Berlin, 25 February, 1849

First of all, as far as your resolve not to enter the lists as competitor for the Königsberg position is concerned, I want to express my recognition of your action by saying no more than that I find it natural of you I understand that your high-minded sentiments and your friendship for me did not let you hesitate long before making this decision But that I see myself compelled to force you to make such sacrifices, really does not belong among the roses of the bed that I have made for myself Despite all this, however, I do not approve your decision from the standpoint of political shrewdness I believe that it would be only to your advantage to compete, even though unsuccessfully The next time they would think of you of their own accord Besides, it is not impossible for events to take another turn Nothing has been heard from Müller yet It could be that some turn of fate may still help me with my trip Consequently, I haven't yet communicated your resolve to Brucke, and I want you to consider it again in terms of what I have said There is no urgency about the entire business, for Brucke writes to me that the decision concerning him will probably drag along to midsummer

At the same time, I will settle the matter of the physics job I find that Bunsen is completely right with his worry that my training in physics may be one-sided It is another question, of course, whether he will find a research physicist who has an all round, or even a varied training In the present state of science, the branch of science to which one devotes special attention is not unlike some talent developed by an individual, and may be described in the words of Borne as a goose liver which is raised at the expense of the rest of the organism In my opinion, however, this does not prevent one from teaching other branches with insight and intelligence On the contrary, as a teacher I would absolutely give preference to a scholar, who investigates a narrow field and does excellent work in it, rather than to one who has a wide knowledge but has accomplished nothing outstanding in any particular field The former will be more deeply imbued than the latter with the spirit and method of science, which appears to me to be the main thing in teaching, and will be able to communicate them One-sidedness presupposes passion and enthusiasm, and this *sacra ignis* I regard as the chief endowment of a teacher—if they are not simply pharmacists (or doctors)

Ludwig to du Bois-Reymond

Zurich, 28 October, 1849

I have finally arrived in Zurich and am in a position to write to you How many hours of boredom lie between the last letter to you and this one! But just as the former marked the end of a period of orderly activity, so I hope this

one will begin another Books are still lacking, however, and I have not yet been installed as director of the anatomy [department] My travel adventures may interest you, since I journeyed as a traveling salesman for the animal electricity of E du Bois-Reymond In Frankfurt, Tiedemann got hold of me on the street and asked about you when the conversation turned to Giessen As usual, he was not in a position to go into the essential point In Heidelberg, Henle immediately seized me and demanded that I show him some of your experiments At his home (I stayed in his house for four days) you were a daily topic of conversation, and for two whole mornings Henle, Jolly and I performed all kinds of experiments on the electroscopic frog's legs, which naturally succeeded brilliantly Jolly, who has studied the theory with his habitual intellectual acumen, is to be counted among your admirers, and I would be very happy if you were to meet this cordial and talented man In Freiburg, I met Pouillet-Muller, we went through the Schwarzwald Valley, up hill and down dale, conversing naturally about du Bois-Reymond Here I did not find the same receptiveness, only a short time previously Muller had visited Schonlein in Basel where he had heard only ill of you Muller, a decided realist, could be convinced only by experiments, and so, just as I had done in the Heidelberg physiological laboratory, I also carried out an electrophysiological assault in Freiburg in the presence of Muller, Siebold, and the excellent botanist A Braun Muller, a good and skilled experimenter, was able to assist me better than Jolly, as a result the experiments were so conclusively and magnificently successful here that there was general acclamation in your favor Siebold even wants to demonstrate the experiments in his lecture Finally, I would have liked to speak to Schonlein in Basel, but unfortunately the time was short, and my throat, unaccustomed as it was to the habits of a traveling lecturer, was so tired that I became completely hoarse I traveled through Basel, but could not stop there, and so it will be reserved for the next time for me to teach him I am satisfied with the successes of this trip, so much the more as I even distributed two or three copies of your book I hope you won't be angry with me because I refer to your wonderful work in such jocular fashion You know only too well that actually I am your enthusiastic apostle

I have now been in Zurich for six days (not until yesterday, however, did I find a suitable furnished room) You can imagine how charmed and delighted I was during the wonderful autumn days, when we had temperatures of 11-15° R, by the lively vista of the grapepickers along the lovely lake You know all this, and are acquainted with the many beautiful large and small views that its shores present The Swiss character is still not definitely impressed on the landscape here, so that my new residence presents a thousand similarities with my familiar homeland, which appear in the views of the Limmat Valley But here too, however, everything is already larger and more magnificent and for that reason also not so appealing to a heart which until now has found its happiness in small details

Of my new colleagues Lowig in particular has shown himself friendly to

me, it appears that he was chiefly instrumental in putting through my appointment. I find him very amiable and well-informed, but he appears to lack the highest spark of inspiration of the scientist. I do not know Mousson, yet, nor Amsler, a young physicist, who will establish himself here. Frey, associate professor [*Extraordinarius*] of comparative anatomy, and H. Meyer, my prospector, are apparently *stille Grossen*. For many reasons, Frey, Leuckart's comrade, was already my opponent even before I arrived. How he will act now that I have come, I cannot yet say as he has not returned from his vacation. The remaining members of the medical faculty are Hasse, the very image of a Saxon, a good fellow, Locher-Zwingly, a surgeon, outwardly a noble figure, and certainly a good man, Locher-Balber, a polyclinic doctor, and Spondli, the obstetrician, still unknown to me and to others. In addition, my interest is aroused by Naegeli, who is a good botanist at the microscope, but has practically no idea of physics. My institution is charming, situated high above the lake. From my workroom I see the Alps and the innumerable idyls that are scattered round about the lake. The collection appears adequate and the attendant good, the number of students is said to be not inconsiderable. As far as my own situation is concerned, it is as yet not good nor yet bad, I have not actually begun my new activity and cannot say how much I will be able to achieve here as teacher and writer. There may be a lack of stimulation, but to compensate for this the external conditions are better than in Marburg. The literature is much more plentiful, in particular we have at our disposal journal clubs that are quite outstanding, one scientific society has a very rich library and no less significant is the municipal library. In addition, I have a fund of 1000 Swiss francs which I will be able to use for scientific investigations, since anatomy occasions practically no expenses. Engel, my predecessor, made very little use of this fund, so that this year there remains the sum of 1000 francs. This sum I think I will use immediately in part to acquire a multiplier and an air-pump. You will certainly give me your advice. Will a multiplier with 6000 turns be adequate? Or would you advise one with more, in case one wants to carry out experiments oneself at some time? Advise me also about the air-pump, I will likewise order it in Berlin. Remember me to Humboldt and tell him that as a result of his letter an increase in salary for me had been proposed to the Elector, when I declined to stay, Eberhard repeatedly wrote to me and urgently requested me to remain in Marburg, unfortunately his request came too late. Regards to my little Fick, he has most certainly visited you already, and you are no doubt pleased with him, because you are capable of disregarding a number of eccentricities. Train him as you wish, and influence his character. It is very necessary in his case, and he is entirely in your hand. So farewell, good and noble du Bois, and remain with your ample heart my friend to the degree that I wish.

1821 — 1894

HERMANN VON HELMHOLTZ

Probably the most illustrious of that galaxy of famous scientists taught by Johannes Muller was Hermann von Helmholtz, physician, physiologist, physicist, and philosopher of science. As a young man, he wanted to be a physicist, but lack of funds led him to enter a military medical school in Berlin where he received a medical education at state expense. Helmholtz graduated in 1842, with a dissertation on the structure of the nervous system in invertebrates, and, after a period as assistant surgeon at the Charité Hospital in Berlin, was stationed at Potsdam. While still a military surgeon, he published, in 1847, his epoch-making paper *On the Conservation of Energy*.

In 1848 Helmholtz took a position as teacher of anatomy at the Art Academy in Berlin, but in the following year he left for Königsberg to become professor of physiology and general pathology. In 1855, he came to Bonn as professor of anatomy and physiology, and in 1858 to Heidelberg as professor of physiology. Finally, in 1871, Helmholtz achieved his original ambition when he was called to the chair of physics at Berlin.

In contrast to his friends, Emil du Bois-Reymond and Carl Ludwig, Helmholtz was neither an orator nor an inspiring teacher, but primarily a research scientist. His interest was concentrated on the physics of physiology. This led him to study the physiology of the sense organs—the eye and the ear. His *Handbook of Physiological Optics* appeared from 1856 to 1866, and the *Theory of Tonal Sensation* in 1862.

It was in connection with his studies on the eye that Helmholtz in 1851 invented the ophthalmoscope, an instrument which Adolf Kussmaul had labored in vain to produce, and which was to be of the greatest practical importance for the development of ophthalmology. Helmholtz gave the following account of this fundamental discovery:

WHILE preparing for the lecture I first hit upon the possibility of the ophthalmoscope, and then on the plan for measuring the velocity of the impulse in a nerve.

The ophthalmoscope has become the most popular, perhaps, of my scientific achievements, but I have already told the ophthalmologists how luck played an incomparably greater part than my merit in this matter. I had to explain to my students the theory of ocular luminosity, which stemmed from Brücke. Actually, Brücke had missed the discovery of the ophthalmoscope by a hair's breadth. He had only neglected to ask himself the question: To which optical image do the rays returning from the luminous eye belong? Had he raised this question, he could have answered it just as quickly as I did, and the ophthalmoscope would have been discovered. I was considering the problem from different angles, in order to see how I could present it most simply to my audience, and while so engaged I hit upon the aforementioned question.

As a result of my medical studies I was well acquainted with the difficulties confronting ophthalmologists in those conditions which at that time were lumped together under the term amaurosis. I immediately set about to construct the instrument out of spectacle lenses and cover glasses for microscopic preparations. At first it was still quite difficult to use, and without a firm theoretical conviction that it must work, I would perhaps not have persevered in my efforts. But after about eight days I had the great pleasure of being the first to see clearly a living human retina.

1815 — 1848

HORACE WELLS

On October 16, 1846, William T. G. Morton successfully demonstrated surgical anesthesia by means of ether. The hypotheses and experiments of many men preceded Morton's demonstration. Others had anticipated the discovery of the principle of anesthesia, and two, Horace Wells and Crawford W. Long, fully realized its significance for surgery. It is not surprising, therefore, that a controversy over the priority of discovery was soon in full swing. The first printed claim on the part of Wells to the discovery of anesthesia appeared in the *Hartford Courant* on December 9, 1846. As a significant historical document, and as a reflection of the personality of the author, this letter is presented here.

Hartford, Dec 7, 1846

MR EDITOR

You are aware that there has been much said of late respecting a gas, which, when inhaled, so paralyzes the system as to render it insensible to pain. The Massachusetts General Hospital have adopted its use, and amputations are now being performed without pain. Surgeons generally throughout the country, are anxiously waiting to know what it is, that they may make a trial of it, and many have already done so with uniform success. As Drs. Charles T. Jackson and W. T. G. Morton, of Boston, claim to be the originators of this invaluable discovery, I will give a short history of its first introduction, that the public may decide to whom belongs the honor.

While reasoning from analogy, I was led to believe that the inhaling of any exhilarating gas, sufficient to cause a great nervous excitement, would so paralyze the system as to render it insensible to pain, or nearly so, for it is well known, that when an individual is very much excited by passion, he scarcely feels the severe wounds which may at the time be inflicted, and the individual who is said to be 'dead drunk,' may receive severe blows, apparently without the least pain, and when in this state, is much more tenacious of life than when in the natural state. I accordingly resolved to try the experiment of inhaling an exhilarating gas myself, for the purpose of having a tooth ex-

tracted I then obtained some nitrous oxide gas and requested Dr J M Riggs to perform the operation at the moment when I should give the signal, resolving to have the tooth extracted before losing all consciousness This experiment proved to be perfectly successful—it was attended with no pain whatever I then performed the same operation on twelve or fifteen others with the same results

I was so much elated with this discovery, that I started immediately for Boston, resolving to give it into the hands of proper persons, without expecting to derive any pecuniary benefit, therefrom I called on Doctors Warren and Hayward, and made known to them the result of the experiments I had made They appeared to be interested in the matter and treated me with much kindness and attention I was invited by Dr Warren to address the Medical Class upon the subject, at the close of his lecture I accordingly embraced the opportunity, and took occasion to remark that the same result would be produced, let the nervous system be excited sufficiently by any means whatever, that I had made use of nitrous oxide gas or protoxide of nitrogen as being the most harmless I was then invited to administer it to one of their patients, who was expecting to have a limb amputated I remained some two or three days in Boston for this purpose, but the patient decided not to have the operation performed at the time It was then proposed that I should administer it to an individual for the purpose of extracting a tooth Accordingly a large number of students, with several physicians, met to see the operation performed—one of their number to be the patient Unfortunately for the experiment, the gas bag was by mistake withdrawn much too soon, and he was but partially under its influence when the tooth was extracted He testified that he experienced some pain, but not as much as usually attends the operation As there was no other patient present, that the experiment might be repeated, and as several expressed their opinion that it was a humbug affair, (which in fact was all the thanks I got for this gratuitous service), I accordingly left the next morning for home While in Boston, I conversed with Drs Charles T Jackson and W T G Morton in Boston, upon the subject both of whom admitted it to be entirely new to them Dr Jackson expressed much surprise that severe operations could be performed without pain, and these are the individuals, who claim to be the inventors When I commenced giving the gas, I noticed one very remarkable circumstance attending it, which was, that those who sat down resolving to have an operation performed under its influence, had no disposition to exert the muscular system in the least, but would remain quiet as if partially asleep Whereas, if the same individuals were to inhale the gas under any other circumstances, it would seem impossible to restrain them from over exertion

I would here remark, that when I was deciding what exhilarating agent to use for this purpose, it immediately occurred to me that it would be best to use nitrous oxide gas or Sulphuric Ether I advised with Dr Marcy, of this city, and by his advice I continued to use the former, as being the least likely

to do injury, although it was attended with more trouble in its preparation. If Drs Jackson and Morton claim, that they use something else, I reply that it is the same in principle if not in name, and they cannot use anything which will produce more satisfactory results, and I made those results known to both of these individuals more than a year since.

After making the above statement of facts, I leave it for the public to decide to whom belongs the honor of this discovery.

Yours truly,

Horace Wells, Surgeon Dentist

1813 — 1878

CLAUDE BERNARD

It is indeed curious how many paths in modern physiology and medicine start from the laboratory of Claude Bernard. Yet, this great exponent of the experimental method originally wanted to be a dramatist. Born as the son of a wine-grower in 1813, Bernard was apprenticed at the age of eighteen to a pharmacist in Lyons, but left in 1833, after having served a year and a half. At the age of twenty-one, he went off to Paris, taking with him the manuscript of a dramatic tragedy and a letter of introduction to the critic, Saint-Marc Girardin. The latter read his play and advised him to study medicine.

In 1834 Bernard entered the Medical School in Paris, and in 1843 obtained the degree of doctor of medicine with a thesis on the rôle of the gastric juice in nutrition. Previously, he had become the assistant of François Magendie, by whom he was introduced to the science of physiology. Bernard never at any time engaged in the practice of medicine, and from 1844 on his publications reporting the results of his experimental investigations followed one another in rapid succession. Some of the difficulties attendant at that time upon the setting up of a private laboratory for animal experimentation are amusingly described in the first of the two selections printed here. In 1854 Bernard became professor of general physiology at the Sorbonne, and in 1855, upon the death of Magendie, he became the successor of his old teacher as professor of medicine at the Collège de France. In 1854 he was elected a member of the Academy of Sciences, and, in 1868, to the French Academy.

Claude Bernard was an experimental scientist, heart and soul. This is clearly illustrated in the letter which he wrote to M. d'Arsonval, the father of the young man, whom he chose to act as his assistant, and who was destined to succeed him as professor at the Collège de France. The structure of present-day physiology rests in large measure on the sure foundations that he laid. The rôle that the pancreas plays in digestion (1846), the functions of the nervous system in the control of the blood vessels (1851), the liver as the place where glycogen is produced (1853), the action of curare—these are only a few of the discoveries by which he enriched medical knowledge. Furthermore, his idea of an "internal environment," that is, the fluids that bathe the cells of which living bodies are composed, has had an extremely fruitful development in modern physiology.

Finally, Bernard, in his introduction to the experimental method, succeeded in showing how a scientific mind operates

In his later years, Bernard was plagued by illness, but he had about him his faithful pupils, and when he died in 1878, he was honored by a state funeral

TWENTY-FIVE years ago when I began my career in experimental physiology, I found myself in those difficulties which are reserved for experimenters As soon as an experimental physiologist was discovered, he was denounced, became the abomination of the neighbors, and was handed over to the police for prosecution At the beginning of my experimental studies I ran into such difficulties many times, but I must admit that a stroke of chance in my case brought it about that I should actually come under the protection of a police commissioner It was about 1844, I was studying the properties of gastric juice with the aid of a discovery of M Blondlot which consisted in collecting the gastric juice by means of a cannula or a sort of silver faucet inserted into the stomachs of living dogs, a proceeding which caused no detriment whatever to their general health A celebrated surgeon from Berlin, Dieffenbach, came to Paris, he heard of my experiments through my friend, M Pelouze, and wished to see the cannula operation done Having been told of his wish, I hastened to satisfy it, and I performed the experiment on a dog in the chemical laboratory of M Pelouze in the rue Dauphine After the operation the animal was shut up in the court so that we could observe him later But the next day the dog got away in spite of our watchfulness, carrying with him in his stomach the accusing cannula of a physiologist Some days later, early in the morning, when I was still in bed, I received a visit from a man who came to tell me that the police-commissioner of the Medical School quarter wanted to speak to me and I was to go to his house I went sometime during the day to the house of the police-commissioner in the rue Jardinets I found a little old man, very respectable looking, who received me at first very coldly and without saying a word, then, taking me into another room, he showed me to my great astonishment, the dog I had operated on in the laboratory of M Pelouze, and asked if I could tell him who had put that instrument into the dog's stomach I replied that I could, adding that I was very happy indeed to find my cannula which I had thought lost My confession, far from satisfying the commissioner, at first provoked his wrath, for he admonished me with exaggerated severity, accompanied by threats, for having had the audacity to take his dog for experimentation I explained to him that it was not I who had taken his dog, but I had bought it from persons who sold dogs to physiologists and who said that they were employed by the police to collect stray animals I added that I regretted having been the involuntary cause of the pain which the misadventure to his dog had caused him, but the animal would not die as a result of what had happened to it, there was only one thing to be done, to let me take back my silver cannula and him keep the dog These last words caused the commissioner to change his tone, and his wife and daughter now

appeared appeased I removed my instrument and promised to return later I did in fact return many times to the rue Jardinot The dog was perfectly cured within a few days, I became the friend of the commissioner and I found that I could count henceforth on his protection That is why I came to install my laboratory in his precinct, and for many years I was able to continue my private courses in experimental physiology in that quarter under the protection of the police-commissioner, right up to the time when I was nominated substitute for Magendie at the Collège de France

40, rue des Écoles, July 6, 1876

Monsieur, you express in your letter feelings of which your son, Arsène, has already informed me I know that you were counting on him to be with you and to relieve you at the end of your medical career, and that it is a great sacrifice to be separated from him in order that he may enter scientific life in Paris I understand, monsieur, and I fully respect the natural conflict which arises in the hearts of a good father and a good son All that I can say to you is that, for my part, ever since I have had your son with me, I appreciate him more and more

I have seen few young people so well endowed as he for the cultivation of the sciences He has a great fund of knowledge, a most inventive mind, taste and enthusiasm for both practical and theoretical questions, and, added to this, a kindly and helpful nature which makes him loved by all his comrades and everyone who knows him

You understand, monsieur, that it would be very difficult in these circumstances for me not to encourage him and not to believe it my duty to give him my affection and my support in the direction in which I believe he is destined to succeed

Without doubt scientific careers are not always so rapid in their material results as a professional career, properly so-called, but they have other pleasures which compensate Besides, it is not a matter at this time of turning your son from his medical studies, quite the contrary We have just finished my course at the Collège de France, and your son will have his time almost free until the month of December I have urged him to pass his medical examination

Your son is still so young that he has time for reflection before making a definite decision, but for my part I shall always encourage him in the direction of a scientific career, where I believe, as I have already said, that he has a fine future in reserve for him

Believe me, my dear confrère,

Most sincerely yours,
Claude Bernard

1801—1881

ÉMILE LITTRÉ

Maximilian-Paul-Emile Littré was one of the two great French medical historians of the nineteenth century. According to Arturo Castiglioni, his bilingual (Greek-French) edition of the Hippocratic writings (10 volumes, 1839-1861) "constitutes the most important modern work in Hippocratic literature." In addition Littré is famous as a social philosopher of the school of Comte, as a lexicographer and a philologist. As a young man he had studied medicine, and remained attached to it throughout his life. Like so many other French physicians of the nineteenth century, Littré participated in the uprisings of 1830, 1848 and 1870.

The great scholarly achievement of Littré's life, however, was his dictionary of the French language. The Dictionary was begun in 1857 when Littré was fifty-six, and was only interrupted twice, in 1861 when the widow of Auguste Comte asked Littré to write a biography of the philosopher of positivism, and again during the Franco-Prussian War. Littré's account of this undertaking, *How I Completed My Dictionary of the French Language*, gives an interesting picture of his daily life. From this we have chosen the following selection. When Littré died in 1881, his successor in the French Academy was the great scientist Louis Pasteur.

MY DAILY program required that as little time as possible be sacrificed to the physical conditions of existence. Through careful avoidance of any superfluous expenditure I had reached a point where I could allow myself the luxury of a city and a country residence. My summer residence was at Ménéville-Roi, Seine-et-Oise, there I had a little old house and a well-cultivated fruit and vegetable garden comprising about $\frac{1}{3}$ hectare, which like Virgil's old man "dapibus mensas onerabat inemptis." Here in this partial retirement from the world (for my village lies far from the main highway of the Parisians who on Sundays flee from the capital), I was master of my time. I rose at eight o'clock in the morning. "Late enough for a man who is in such a hurry," some one will say. But be patient! While my bedroom, which was also my workroom (the house was small, as I have said) was being put in order, I descended to the ground floor with some work, thus, for instance, I completed the preface to my dictionary. I had learned from Chancellor d'Aguesseau not to allow such apparently idle moments to pass unused. His unpunctual wife always made him wait for his midday meal and even sent him about his business with a book saying "There! that is just the thing while you are waiting for your meal!" About nine o'clock I ascended to my room and until lunchtime corrected the proof sheets that had arrived. At one o'clock I again sat down at my desk and fulfilled my obligations to the "Journal des Savants," which in 1855 had appointed me editor, and to which I also made it my business to perform my duty punctually. From three to six I occupied myself with my dictionary. At six o'clock I descended again for dinner, which was always ready as the clock

struck the hour—for my wife did not agree with Mme Aguesseau. One hour was usually sufficient. It is generally recommended as a medical precept that one should not start to work immediately after a meal. I have constantly broken this rule, after I had convinced myself by experience that my infraction of this precept would not cause me any suffering. With that I had reduced my physical needs to a minimum. At seven o'clock in my study I again occupied myself with my dictionary, which I did not relinquish any more. Without a break I worked until twelve o'clock, at that hour of midnight my family left me alone. My next stop was at three o'clock in the morning, at which time my daily task was usually completed. But if I had not finished, I continued my nocturnal vigil and more than once during the spring season I extinguished my little lamp and continued to write by the light of the morning sun.

1805 — 1884

SAMUEL D. GROSS

Among the contributions of Samuel D. Gross to American medicine, the literary side of his work is perhaps most important. At a time when thousands of doctors, often inadequately trained, and scattered throughout the United States, needed books for study and reference, Gross satisfied the need. He was a voluminous writer and helped to create an indigenous medical literature. In 1859, in Philadelphia, he completed his surgical treatise, *A System of Surgery, Pathological, Diagnostic, Therapeutic, and Operative*, which went through six editions. But Gross's achievement is not limited to his literary efforts. He also exercised a great influence as a teacher, through the force of his personality. As a man of high ideals, he reflected on the art of teaching, and in his autobiography, published by his sons after his death, he laid down his thoughts on the subject.

ONE of the chief motives which induced me to remove to Philadelphia was to get rid of a large and annoying family practice at Louisville and to write an elaborate *System of Surgery*, for the production of which my leisure in Kentucky was not sufficient. I had long contemplated such a work, and I knew that unless I changed my residence I should never be able to fulfill an object which lay so near my heart and was so intimately interwoven with my ambition and the great purposes of my professional life. Accordingly, upon my arrival in Philadelphia, I confined myself strictly to office and consultation business, to patients from a distance, and to surgical operations. A few families, nevertheless, attached themselves to me, despite my wishes, but, with these exceptions, I have rigidly carried out my original intention, and I have thus escaped a vast deal of hard work, especially night practice, which always causes so much wear and tear of mind and body. The income from my practice the first year amounted to four thousand dollars, from the school, a little upwards of five thousand dollars. My business after this rapidly increased, and

the school also increased in prosperity until the outbreak of the war, when both declined, as we were cut off from Southern patients and Southern students, as I have already mentioned

I had commenced the composition of my *Surgery* several years before I left Kentucky, and I now set vigorously to work to complete it I had sketched the plan and adopted a title, both of which met with the approval of Messrs Blanchard & Lea, who had agreed to publish it I had determined to do my best to make it, if possible, the most elaborate, if not the most complete, treatise in the English language, and I therefore gave myself ample time for the labor The heads of my lectures served me as a valuable guide, and I generally wrote with facility, as my knowledge of the subject, from long study, practice, and contemplation, was extensive, and, in the main, accurate I generally spent from five to eight hours a day upon my manuscript, subject of course to frequent and sometimes annoying interruptions by patients In the winter I commonly sat up till eleven and half past eleven o'clock at night I then closed my study, and almost invariably took a walk down Chestnut Street as far as the State House, in order to obtain a little fresh air, and to shake off my mind the subject upon which I had been so assiduously engaged By this means I generally succeeded in obtaining a good night's rest with sound and refreshing sleep Unless I was greatly interrupted, I seldom wrote less than from ten to fifteen pages of foolscap in the twenty-four hours, and I rarely retired until they were carefully corrected It was not often I rewrote anything, although I not unfrequently interlined In the winter, during the continuance of the lectures, my pen was less active than in the recess, but I nevertheless seldom failed to do a good day's work I jogged along in this manner until early in the spring of 1859, when, the manuscript being ready, the printers commenced their task, and I the hard one of proof-reading The preface was dated July 8th, 1859 Soon after, the work was issued in two portly octavo volumes, numbering, in the aggregate, two thousand three hundred and sixty pages, and profusely illustrated by engravings on wood The mechanical execution was highly creditable to the publishers, printers, and artists The edition comprised two thousand copies, and cost a large sum of money, enough, as Blanchard & Lea assured me, to have enabled them to open a respectable mercantile house on Market Street

An author is not always happy when his labor is over Like Gibbon, he may congratulate himself, or even thank God, that the last syllable has oozed from the point of his pen But his self-complacency is short-lived, when, after the first night's repose, he reflects, that his work has to pass through an ocean of criticism, and that every little cock-sparrow that sits upon an editorial tripod is ready to pounce upon him and pronounce judgment upon his writings, whether he knows anything of their merits or not I had not to wait long for a verdict First came the weeklies, then the monthlies, and bi-monthlies, and finally the stately quarterlies, all testifying to the excellence of the work, and not a few of them declaring that it was the best *System of Surgery* in the

English, if not, indeed, in any language. Of course, they said, it had faults and imperfections, but these were, for the most part, passed lightly over, and, in the main, I had great reason to be satisfied with the verdict of my countrymen. Abroad the work was equally well received, the reviewers bestowing upon it the highest encomiums, both as a scientific and literary production. My surgical brethren to whom I had sent complimentary copies, all, with one exception, and that a former colleague and one of my most intimate friends, at least confessedly so, bore testimony to the success of my labors. Although I have since repeatedly met the expected gentleman, and have seen in his study the identical copy of the work I sent him, he has never alluded to it in my presence. My philosophy has never been able to comprehend his reticence, the less so as he occupied, and that very deservedly, an elevated professional position.

I have often been told that I have simplified surgery. A higher compliment could not have been paid me. Both as a writer and as a teacher my aim has always been to make myself understood, or, in other words, to express myself in clear, intelligible language, and to compress the greatest amount of matter into the smallest possible space. I was never satisfied unless I could give at least one exhaustive outline of the subject discussed. To leave a subject imperfect was, in my opinion, to mutilate it.

What compensation does the reader think I obtained for this hard work, this excessive toil of my brain, including original composition, the correction and improvement of new editions, and the proof-reading, in itself a horrible task, death to brain and eyes, extending over a period certainly not less than fifteen years? Eighty-five cents a copy, all told, and no extra dividends! Two dollars and a half ought to have been the price, or, what would have been more equitable, an equal distribution of the profits from the sale of the work. No wonder authors are poor and publishers are rich!

The opening portion of my course on Surgery has always been devoted to the discussion of principles, without a knowledge of which no student can possibly make any true progress. Not fewer than seven weeks have usually been given to this object, the topics embraced in it being inflammation and its consequences, syphilis, struma, tumors, and wounds. These topics being disposed of, I then lectured upon the diseases and injuries of particular regions, organs, and tissues, rapidly discussing each subject as it came up in proper order, so that by the end of the session the course may be said to have generally been a complete one. I never deal in hypothesis, conjecture, or speculation. My plan has always been to confine myself as much as possible to matters of fact, and to make whatever I said my own, as if it were the result of my own experience, reading, and reflection. I am convinced that any teaching that does not rest upon such a basis is worthless.

Many teachers, American as well as European, think that they have done

all that duty requires of them when they have instructed their pupils in practical and operative surgery. The principles of surgery are the principles of medicine, or, in other words, the principles of the art of healing, and therefore, unless a practitioner is fully acquainted with them, he is utterly unfit for his business. Most physicians and surgeons for this very reason, are routinists. They leave the lecture-room with the merest modicum of information, which is never improved by subsequent training, observation, reading, or reflection. When I die I wish no better epitaph than this—"A teacher of Principles."

A part of the first lecture of my course has always been employed in laying down a general plan of it, with an account of text-books, and the manner in which the student should deport himself in the amphitheatre. I never failed to lay down, distinctly and emphatically, my rules upon this subject, so that the class should fully comprehend my wishes. Punctuality, erect posture, and perfect silence were indispensable conditions. I never tolerated irregularity of any kind, lying down upon the benches, whispering, reading of letters, going out before the hour was over, or entering after the lecture had commenced. The class, in consequence of this precaution, was always most orderly, respectful, and attentive. The discipline of my room was perfect, and it was therefore a very uncommon thing for me to be obliged to rebuke a student. Claptrap of any kind I never could bear. Nothing was more offensive to me than applause as I entered the amphitheatre, and I never permitted it after the first lecture. I always said, "Gentlemen, such a noise is more befitting the pit of a theatre or a circus than a temple dedicated, not to Aesculapius, but to Almighty God, for the study of disease and accident, and your preparation for the great duties of your profession. There is something awfully solemn in a profession which deals with life and death, and I desire at the very threshold of this course of lectures to impress upon your minds its sacred and responsible character, that you may be induced to make the best possible use of your time, and conduct yourselves in a manner worthy of the dignity of Christian gentlemen." Such appeals had always a most salutary effect, and, although I was a rigid disciplinarian, I am quite sure that I always enjoyed the esteem and affection of every member of my class. A teacher who cannot command the respect and attention of his pupils has no business in the lecture room, he is out of place, and the sooner he quits the better.

The first element in the art of teaching is a thorough knowledge of one's subject, a complete mastery of what one is obliged to talk about, the next, the faculty of presenting it in a clear, agreeable, and satisfactory manner, and the third, the ability to keep alive the attention of one's audience. The last is often maternally aided by the recital of an appropriate anecdote, or an illustrative case. In the former I never indulged much, and I have especially had a contempt for vulgar anecdotes, of which some teachers make such free use, and which are always out of place. Cases illustrative of particular points of practice never fail, if well told, to make a good impression, and are often more effective than the most interesting anecdotes. A lecturer is of no account unless

he can move as well as instruct his pupils. If he cannot do this, much of his teaching must fall by the wayside upon barren soil.

A teacher should be neat in his habits, dress, and address before his class, choice in the selection of his language, and thoroughly systematic in the discussion of his topics. Slovenliness of mind and body has a demoralizing effect, and cannot therefore be too pointedly condemned.

1836 — 1921

WILHELM VON WALDEYER

An academic teacher lives on not only in his own research, but equally, and perhaps even more, in his students. It is not uncommon to find that such a man in writing an autobiography does not omit mention of his favorite pupils. To see a student through the eyes of his teacher is an interesting experience, and for this reason we offer Waldeyer's remarks on Paul Ehrlich (see page 108). Wilhelm von Waldeyer, himself a student of Jacob Henle (see page 245), and one of the outstanding anatomists of modern times, was first professor in Strassburg, and later director of the Anatomical Institute and professor in Berlin. It was Waldeyer who first gave the name chromosomes to the rod-like elements of the cells that control heredity. He also developed the neurone theory, according to which the nervous system is composed of independent cellular elements connected by contact, and carried out significant studies on the origin and structure of cancers.

PAUL EHRLICH, a native of Strehlen in Silesia, went with me to Strassburg, he was then seventeen years of age and had already received his diploma from the Gymnasium. His father had recommended him to me, and I gladly received him in my house. He attended my lectures, and my course in microscopy. Every student was assigned to a separate table, equipped with a microscope and the necessary materials. Four times a week, for two successive hours, my assistants and I instructed the students, they could then work independently at their tables as long as they wanted from nine in the morning to six in the evening. During those hours when most of the students worked on their own, my assistant and I also gave instruction. Soon I noticed that Ehrlich worked for hours at his table, completely absorbed in his microscopic observations. Little by little his table became covered with stains of all colors. One day as I saw him I asked what he was doing to make his table glitter so with all the colors of the rainbow. Thereupon, this young student, who was only in his first semester, and who in this course was receiving his first academic instruction, replied "I am experimenting." With a friendly nod of approbation, I said to him "Well, then, go ahead and experiment some more!" Upon inspecting the preparations that he had made without any special guidance, I soon saw that in Ehrlich I had an extraordinarily talented student. Very infrequently did he ask for advice, instead, he worked almost independently.

from the very beginning. Such students need be shown only the beginning of the path, they will then travel along it rapidly without any further guidance, and soon open new paths for themselves.

1848 — 1915

EDWARD L. TRUDEAU

In 1882 Robert Koch announced his discovery of the bacillary cause of tuberculosis, the tubercle bacillus, and shortly thereafter, in the same year, Paul Ehrlich published a method for staining tubercle bacilli to make them visible, which with modifications is still in use at present. When Trudeau heard of these developments he wanted to read Koch's paper, but he knew no word of German. A friend saved the day by having the entire eighty-eight pages translated into English. Armed with this and the instruction obtained from Dr. Prudden in New York, Trudeau set out to begin his experimental work.

A FEW more invalids were beginning to come to the Adirondacks, and while at work in starting the Sanitarium I had been practising more, and had read everything I could find about tuberculosis. In 1882 Koch published in Germany his epoch-making paper on "The Etiology of Tuberculosis," and I read in my medical journals one or two abstracts of the long and painstaking experimental work which had led him to the startling conclusion that a specific germ, the "tubercle bacillus," was the cause of this widespread disease. There was every reason why this announcement of Koch's should make a deep impression on me.

I became strongly convinced of the soundness of his deductions and the far-reaching importance of his discovery, and intensely anxious to test his experimental results. But I knew nothing of bacteriology, had never heard the name before. I lived in a remote region which made access to books, scientific apparatus, or other physicians impossible. I had my microscope, however, and I decided the next time I went to New York to devote all my efforts to learning how to stain and recognize the tubercle bacillus under the microscope. I could then test Koch's conclusions as to the presence of the germ in the patients' secretions, and could plan to learn how to cultivate it outside of the body as time passed, but the first thing to do was to learn to find and recognize the germ.

I was so intent on this plan that during my entire visit to New York my time was given to its accomplishment. I consulted all my physician friends as to who could teach me what I wanted to learn, but none of them knew or took any interest. I heard that Dr. George Peabody, who, I knew, was acquainted with a physician who had worked in Koch's laboratory, and when I called on him he gave me his card and told me to go to see Dr. T. Mitchell Prudden,

who then taught pathology at the College of Physicians and Surgeons. The college was still located at the old stand on the corner of Twenty-third Street and Fourth Avenue, and as I went up the steps many joyous memories of my student days came crowding back to me. In those days there had been no laboratory at the college, but since then pathology had grown in importance as a study, and the trustees had somehow secured a large, dark room, with a high ceiling, next to the drug-store and ice-cream saloon. This place had been in use as a laboratory for some time, and a more gloomy, ill-smelling place can hardly be imagined. Dingy, dust-covered windows let in a little feeble light, but there was no provision for any kind of ventilation. Every kind of pathological specimen, representing every deadly disease humanity is heir to, was constantly brought to this place, and after having been examined was not always thoroughly removed. Students came to make microscopic sections and study them under Dr. Prudden's direction at a long, low table, where a few microscopes were kept.

The most curious arrangement was the sanctum of the Professor. It was reached by climbing up a pair of steps as steep as any ladder, and was a small room perched in the air and partitioned off at a height of twelve feet or more from the laboratory. No doubt in desperation Dr. Prudden had adopted this ingenious method of obtaining a little privacy for the serious pathological studies he was constantly carrying on and which have made his name famous, but it certainly was a queer outfit. It must be remembered, however, that the scientific side of medicine and the experimental method had not then won the all-important place they now occupy, and the pioneers had of necessity to put up with what facilities they could secure from a conservative Board of Trustees who no doubt thought a laboratory an unnecessary and uncalled-for innovation.

With my card of introduction from Dr. Peabody in my hand, I climbed the ladder and for the first time met Dr. Prudden, who has ever since been a good and most helpful friend to me. Though his striking personality made a most favorable impression on me, I must say he was rather short with me. He no doubt was constantly annoyed by all sorts of applications. Yet, I could come to the laboratory and he would teach me how to stain the tubercle bacillus, I could have one of the microscopes when the class didn't use them, he would ask Dr. Hodenpyl to show me how to make the stains, and that was all. I was bowed down through the trapdoor in the floor, and disappeared down the ladder to the main laboratory.

I got a microscope and a place at the long table. I was given a specimen said to contain the tubercle bacillus, and Dr. Hodenpyl showed me where the stains were and wrote some simple directions for each step to be taken. Then naturally enough I was left to my own devices, as Dr. Prudden was constantly too busy to do more than ask me at long intervals how I was getting along. I had never done section staining or any similar work, and I certainly was a tyro at it. During the first three days I worked unremittingly, and stained my

fingers, my clothes, even my shoes, and if I stained the bacillus I decolorized the specimen either too much or too little, so that the germ remained invisible under the microscope. Several times I became discouraged, and had it not been for a certain amount of natural persistence, and Dr. Hodenpyl's keen sense of humor in criticising and laughing at my failures, I should have fled from the laboratory and never returned.

At first Dr. Prudden took little notice of me, and I hardly dared climb the ladder and disturb him in his elevated sanctum, but after several days had passed and he still saw me at my microscope he asked me to show him my slides, and, no doubt won by my persistence, he sat down beside me and pointed out to me where my mistakes had been. At last I succeeded, and remained that day until late, repeating my attempts on different specimens until I was quite sure I could bring out the bacillus on the slides. Like the pilot who, when asked if he knew the harbor, said to the captain he certainly did, for he had been on every rock, my knowledge had not been acquired easily, but I knew thoroughly what to avoid doing to insure success, and now I could return to Saranac Lake, study some of my doubtful cases by this test, and begin to repeat Koch's work in growing and inoculating the germ.

When I returned from New York with my newly acquired knowledge as to how to detect the tubercle bacillus, I began at once to equip my small office in the Queen Anne cottage—a room twelve by eight feet, having two small closets at one end—with what simple apparatus I could devise and procure. In this little room I at first kept my microscope and stains and made my numerous examinations of the secretions of patients, inoculated my guinea-pigs and began my attempts at making blood-serum tubes. My little home-made thermostat was placed in one of the small closets, and it was there that I first obtained a pure culture of the tubercle bacillus.

These quarters were so cramped however, that I soon built a little addition off my office, and this became the laboratory in which I worked until the house was destroyed in 1893 by fire originating from my little thermostat. As I knew nothing about the architectural requirements of a sanatorium, so I knew nothing about the requirements of a laboratory, but had the simple apparatus, which consisted of a dry sterilizer and a ridiculous little thermostat, made in the village, and the glassware came from New York.

As I can remember today just how the Adirondack Cottage Sanitarium looked when it first began its humble career, I can see equally clearly the room opening from my little office, which was really the beginning of the Saranac Laboratory for the Study of Tuberculosis. One side of this room was occupied by a long, high, stationary shelf-table set against the wall under three little half-windows, with shelves underneath the table for glassware, a dry and a steam sterilizer, an oil stove, etc. A little, home-made thermostat, heated by a minute kerosene lamp, without any regulating apparatus, stood on a bracket-shelf next to a sink for washing glassware. This sink was as

primitive as the thermostat, as there was no running water in Saranac Lake in those days. At one end on a broad shelf stood a big pail with a dipper and this supplied the water (there was of course no hot water), and the waste from the sink was carried off by a leaden pipe which led to a big pail on the floor, this pail being emptied out of doors when danger of its overflow made this imperatively necessary. At the other window was a small table with my microscope on it, some bottles of stains, and slides in boxes. By the side of this stood a shelf of books, on top of which was always Mr. Lea's precious translation of Koch's paper, to which the Saranac Laboratory has owed its existence.

The "Professor's" equipment was as meagre as that of the laboratory, and consisted only of what he had learned from Koch's paper and the laboriously won knowledge he had just acquired from Dr. Prudden as to staining the tubercle bacillus. As I have said before, I must have been an optimist, for I was much pleased with my little laboratory, and could see nothing but great achievements ahead.

With this humble outfit I began with much enthusiasm, in my imagination, "the conquest of the tubercle bacillus, and if I have never come "within sight of the castles of my dreams," I at least have made some progress along the road leading to them and started others in the same direction, for I was, as far as I can ascertain, the first in this country to cultivate the tubercle bacillus and confirm Koch's brilliant discovery. From the ashes of the little room has sprung the Saranac Laboratory for the Study of Tuberculosis, where for twenty years the work of my associates has steadily advanced our scientific knowledge of tuberculosis, and will, I hope, continue to do so for many years to come.

Dr. Alfred Loomis had always been very friendly to me and had always taken an interest in my work, both at the Sanitarium and in my little laboratory. I had a new proof of this when he wrote me in the fall of 1886 that he had presented my name for membership in two societies—the American Climatological Association and the Association of American Physicians, that I had been elected to both, and that he wanted me to write a paper for the Climatological Association which met in Baltimore the following May (1887). I had never belonged to any medical society or attended medical meetings, but I was much pleased at Dr. Loomis's interest and decided to write a short paper for the Climatological Association, describing the influence of extremes of environment on my inoculated rabbits. In the winter I wrote the paper, which was entitled, "Environment in its Relation to the Progress of Bacterial Invasion in Tuberculosis," and we went to town in May so that I might be present at the meeting of the Climatological Association.

I left my wife and children in New York and went down on the afternoon train to Baltimore with Dr. Loomis. It was the beginning of June, and terribly hot when we reached Baltimore that evening. I hardly slept at all that night. I don't think this was entirely due to the heat, however, as I was beginning to dread the idea of speaking in public before a large audience of doctors,

and I am sure this kept me awake. The next day it was just as hot and I could eat no breakfast. I went to the meeting and found a large hall packed with medical men. I sat next to Dr. Loomis and listened to the papers on the program, but it seemed a long session and the dread of having to speak before such an audience increased.

It was almost time for my paper when I began to feel dizzy and faint. I leaned over to Dr. Loomis and said, "Doctor, I feel badly." He turned around and looked at me and said, "Get up and go out." I tried to, but just before I got to the door darkness overtook me and I fainted. The next thing I remember I was lying on the floor in the hall just outside of the meeting-room, and I could hear the hum of voices. Dr. Loomis was leaning over me and saying, "Where is your paper?" I gave it to him, and then lay there in a sort of half-conscious state listening to Dr. Loomis's strong voice as he read my paper. Then came loud applause, and soon Dr. Loomis came back and handed me the paper and said, "That was a good paper." Other men crowded around me and shook hands with me, and spoke of the paper and hoped I was feeling all right again. I got on my feet and walked out into the street while somebody held my arm, and I soon began to feel much better.

That was my first experience at a medical meeting and the way I read my first paper. I was thoroughly ashamed of myself, but there was no help for what had happened, and I tried to lay my fainting entirely to the excessive heat. I found some comfort, however, later in the fact that my paper was noticed by many of the medical journals in this country, and that abstracts of it appeared in two or three of the well-known medical publications abroad.

When I got back to New York that night I vowed I would never go to a medical meeting again, but I have done so nevertheless on very many occasions. I was a long time overcoming my stage-fright when speaking in public, and I am not sure that I have quite done so yet.

The last time I spoke in public was in strange contrast to my first experience. In May, 1910, I delivered the presidential address in Washington at the Congress of American Physicians and Surgeons, and although I was very ill and miserable with fever and had to get out of bed to do it, the warmth of the reception accorded me by my professional brethren from all over the United States so overwhelmed me that I was not at all aware of any nervousness, and have looked back on that evening as one of the red-letter experiences of my life.

1852 — 1934

SANTIAGO RAMÓN Y CAJAL

In 1906 Ramon y Cajal was awarded the Nobel Prize for his fundamental studies on the microscopic structure of the nervous system. The bestowal of this award was the culminating point of a career that started when the young scientist de-

cided to set up a microscopic laboratory. At that time, he did not know how to carry out the simplest microscopic examination. But with perseverance and at great personal sacrifice, Cajal achieved his aim. His retrospective account of the beginnings of his work, as well as his reaction to the honors which he received reveal in a most delightful way the essential integrity and simplicity of the true scientist.

INSPIRED by some beautiful microscopic preparations which Dr. Maestre de San Juan and his assistants (Dr. López García among others) were so kind as to show me, and anxious besides to learn general anatomy as thoroughly as possible since it is the indispensable complement of descriptive anatomy, I resolved to set up a microscopic laboratory upon my return to Zaragoza. Thanks to the never failing kindness of Don Aureliano Maestre, I passed easily in histology, but I had never seen preparations made nor was I capable of carrying out the simplest microscopic examination. Moreover, what was worse, there was no one in Zaragoza at that time who would orientate me in the realms of the infinitely small. Besides, the Faculty of Medicine, in which I was an assistant and auxiliary, was very short of equipment. Only in the laboratory of physiology was there a fairly good microscope. With this veteran instrument, thanks to the good friendship of Dr. Borao, who was then assistant in physiology, I admired for the first time the amazing spectacle of the circulation of the blood. This highly suggestive demonstration I have already discussed elsewhere. Here I will say only that it contributed predominantly to my development of a love for microscopy.

When I had selected an attic as a laboratory for my attempts at microtechnique and gathered together a few reagents, I lacked only a good microscope. The slender remnants of my pay in Cuba were not sufficient to buy one. Fortunately, during my last visit to the capital I had learned that in the Calle del León, number 25, on the ground floor (I have not forgotten it yet!) there lived a certain dealer in medical instruments, Don Francisco Chenel, who supplied upon the instalment plan excellent microscopes by Nachet and Verick, a French make which was then much in vogue. I accordingly opened a correspondence with this merchant and arranged the terms, they consisted in the payment in four instalments of 140 dollars, the price of a good model of a Verick instrument with its accessories. The magnifying power of the lenses (which included a water immersion objective) reached to over 800 diameters. A little later, I purchased from the same dealer a Ranvier microtome, a *tournette* or turn-table and many other conveniences for microscopy. All this was provided by my modest salary as assistant and the meagre returns from private tutoring in anatomy, but the financial foundation of my laboratory and library was my economies in Cuba. Thus it appears that the diseases acquired in the great Antille turned out in the long run to my advantage. I am certain that, if it had not been for them, I should not have saved a cent during my residence overseas, and, consequently, should not have had available the necessary resources for my scientific education.

It was essential also to procure books and periodicals devoted to microscopy I had few of the former, since I did not read German, the language in which the best treatises upon anatomy and histology were published Only in French versions was I able to read the *General Anatomy* of Henle, and the classic treatise on *Histology and Histochemistry* of Frey For practical work, I was able to consult Beale's *Microscopio en Medicina*, his *Protoplasma y vida*, and Latteux' well-known *Manual técnico* As for scientific periodicals, the shortness of my funds compelled me to confine myself to subscribing to some English archives (*The Quarterly Journal of Microscopical Science*) and a French monthly review edited by E. Pelletan (*Journal de micrographie*) Of Spanish works, I had that of Dr. Maestre de San Juan, very full of facts but very difficult to read

As is evident from what I have said, I began to work alone, without teachers, and with not very abundant equipment, but to everything I applied my ingenuous enthusiasm and my strength of will The essential thing for me was to mould my brain, to reorganize it with a view to specialization, to adapt it strictly, in the end, to the tasks of the laboratory

Naturally, during my honeymoon with the microscope I did nothing but satisfy my curiosity without method, examining things superficially There was presented to me a marvelous field for exploration, full of the most delightful surprises With the attitude of a fascinated spectator I examined the blood corpuscles, the epithelial cells, the muscle fibres, nerve fibres, etc., pausing here and there to draw or photograph the more captivating scenes in the life of the infinitely small

The demonstrations being so easy, I was excessively surprised by the almost total absence of objective curiosity on the part of our professors, who spent their time talking to us at great length about healthy and diseased cells without making the slightest effort to become acquainted by sight with those transcendental and mysterious protagonists of life and suffering What am I saying!—Many, perhaps the majority of the professors in those days, despised the microscope, considering it even prejudicial to the progress of Biology! In the opinion of our academic reactionists, the marvelous descriptions of cells and of invisible parasites were pure fantasy I remember that at that period a certain professor in Madrid, who was never willing to muddle his mind by looking through the ocular of a magnifying instrument, characterized microscopic anatomy as *celestial anatomy* [useless anatomy, translator's note] The phrase which became popular, portrays well the mental attitude of that generation of teachers

Despite the mediocrity of the results, these attempts at research work were highly instructive to me They led me to a knowledge of myself and a knowledge of the psychology of scientists

It is obvious that, with much boldness and presumption, I attributed to myself, *a priori*, some aptitude for scientific investigation My only excuses are

my youth and, especially, the psychological fact that without a certain lack of modesty nobody accomplishes anything important. Anyway, as I adventured in the objective examination of biological problems, my faith in myself increased, for it seemed to me that the presupposed qualities were confirmed *a posteriori*, among the most outstanding being patience bordering upon obstinacy in the mastering of histological methods, dexterity and skill in replacing expensive experimental arrangements with simple and improvised contrivances, indefatigable persistence and enthusiasm for the observation of facts, and finally, best of all, open-mindedness for sudden changes of opinion and correction of errors and preconceived ideas, all of these qualities are naturally of secondary rank, but adequate for the work undertaken. Besides, in this work, which my colleagues and friends considered wearisome, I found the most fascinating of amusements. When I was eagerly occupied at the eye piece, the winter evenings passed rapidly, without my missing theatres or social gatherings. I remember that once I spent twenty hours continuously at the microscope watching the movements of a sluggish leucocyte in its laborious efforts to escape from a blood capillary.

However, as I said before, I became acquainted not only with myself but also with men of science, for nothing enables one to penetrate more deeply into the minds of other investigators than critically to compare their personal interpretations with the actual facts, following from close at hand the plan of action and the steps employed by them to overcome the obstacles and snares with which nature seems to defend herself against human curiosity. In this careful comparison of the model and the copy, there are revealed the intellectual lucidity, the solid culture, the technical difficulties, and sometimes the brilliant findings of genius, but there appear also the prejudices, carelessnesses, and equivocations of the man of science. Once they are discovered, these little mistakes are very useful in that they possess the virtue of jolting the diffidence and inertia of the beginner. From the general checking up of books by comparison with the objects, I came to the conclusion at that time that scientists—except in the rare cases of really great minds—are men like everybody else, without any advantage other than that of having prepared themselves adequately for investigation under the direction of illustrious teachers and in the lukewarm greenhouse of the scientific schools.

The most valuable fruit, however, of the aforementioned efforts at experimentation was the profound conviction that living nature, far from being drained and exhausted, keeps back from all of us, great and small, immeasurable stretches of unknown territory, and that, even in the regions apparently most worked over, there remain still many unknown things to be cleared up.

My enthusiasm, however, did not reach to the point of forgetting the difficulties of the undertaking and failing to recognize my poor preparation for embarking upon it. In spite of my youthful presumption, I soon realized some of my defects, it was urgent that I should extend and bring up to date my knowledge of physics and other natural sciences, that I should avoid the

seductions of theorizing and the fascination of my own hypotheses, that I should restrain the natural tendency to premature publication, to the precipitate interpretation of facts without previously exhausting and carefully weighing all the possibilities, and, above all, that I should increase my knowledge of the literature sufficiently to obviate the bitter delusion of taking for ones own harvest the fruit of another's labour

A few months later, when my quiet and tranquil spirit was returning to the enjoyment of the delightful surprise of concentrated and unnoticed work, I was surprised one morning in October, 1906, when it was almost still night, by a laconic telegram sent from Stockholm and written in German. It said merely

Carolinische Institut verheben Sie Nobelpreis

It was signed by my congenial colleague Emil Holmgren, professor in the Faculty of Medicine. Shortly after, I received another telegram of congratulations from my intimate friend Professor G. Retzius. Finally, after a few days had passed, there reached my hands the official communication of the Royal Carolinian Institute of Stockholm, the body in the hands of which rests the awarding of the Nobel Prize for the Section of Physiology and Medicine. Besides the inestimable honour which was accorded me, this prize had a by no means insignificant economic aspect. At the rate of exchange at the time, it was worth in real money approximately twenty-three thousand duros. The other half was very justly adjudicated to the illustrious professor of Pavia, Camillo Golgi, the originator of the method with which I accomplished my most striking discoveries.

If the Helmholtz medal, a purely honorary reward, caused me feelings of gratification, the Nobel Prize, as universally known as it is coveted by all, gave me a feeling of displeasure and almost of fear. I was tempted to refuse the prize as undeserved, irregular, and, above all, very dangerous for my physical and mental health. Interpreting literally the ordinance of the Nobel foundation, it appeared impossible to award it for the Section of Medicine and Physiology to histologists, embryologists, and naturalists. Hence, up to that time it had been adjudged only to bacteriologists, pathologists, and physiologists.

Facing the prospect of felicitations, messages, tributes, banquets, and other annoyances as honourable as troublesome, I made heroic efforts during the first few days to conceal the event. My precautions were in vain, however. In a short time the tattling press broadcast it to the four winds and there was no remedy but to get up on to a pedestal and make myself the focus of the gaze of everyone.

Methodically and inexorably the dreaded programme of attentions unrolled itself, telegrams of felicitations, letters and messages of congratulations, acts of homage of students and professors, commemorative diplomas, honorary elections to scientific and literary bodies, streets baptized with my name in cities and even in small villages, chocolates, cordials, and other potions of

doubtful hygienic value, marked with my surname, offers of profitable participation in risky or chimerical enterprises, urgent requests for inscriptions for albums and autograph collections, petitions for appointments and sinecures, there was some of everything and to all I had to resign myself, at the same time grateful for it and deploring it, with a smile on my lips and sadness in my soul. In a word, four long months were squandered in acknowledging felicitations, in pressing friendly or indifferent hands, concocting commonplace toasts, recovering from attacks of indigestion, and making grimaces of simulated satisfaction. And to think, that, in order to guarantee my peace of mind and to avoid all possibility of popularity, I had deliberately chosen the most obscure, recondite and unpopular of the sciences!

I must not, however, run into exaggerations which in the present case might sound like ingratitude, nor is it permissible to carry to the extreme the rights of egoism. It must be recognized that the honours rendered to men who in some way pursue the ennoblement of their country are ethically beautiful and efficiently exemplary, they arise from sentiments of unity and veneration too noble to be condemnable. Every well-bred person must be grateful for them and remember them. But we Latin people are extremists in everything. In contrast to the moderation and coolness of the northern peoples, we lack the sense of proportion and of balance, and what begins as a flattering attention ends by being wearisome importunity. In Spain—and Echegaray, Galdós, Benavente, Cavia, and many other justly honoured can bear witness to the fact—in order to emerge safely from the attentions and tributes of friends and admirers, one has to have a heart of steel, the skin of an elephant, and the stomach of a vulture. The sweetness of the first moments is followed by a certain mild bitterness. Like vehement and rude friendship, among us fame bruises while it caresses, it kisses but it crushes. It deprives us of the ease of custom, it disturbs the peace of the spirit, it restricts the sacrosanct freedom of the will, turning us into the target of impertinent curiosity, it endangers humility, compelling us continually to think and speak of ourselves, and, finally, it alters the course of our lives, twisting it into capricious and useless meanderings.

In sincerity, I have to confess something which will perhaps make the reader smile ironically. As I suggested a little while ago, the Nobel Prize gave me more fear than pleasure. Medals, titles, decorations are distinctions relatively tolerated by rivals and adversaries. But a great pecuniary prize! The wealthy honour is something irritating and not easily endured.

1857 — 1932

RONALD ROSS

On August 20, 1897—"Mosquito Day"—Ronald Ross solved the fundamental puzzle of the great malaria problem, by finding in the stomach wall of a "dapple-

winged" (*Anopheles*) Mosquito that had been fed only on a malarious patient, certain cells that turned out to be forms of the malarial plasmodium. The account of this momentous event as related by Ross in his autobiography imparts to the reader the atmosphere—the tenseness, the weariness, the hoping against hope—in which the discovery was made.

THE 20 August 1897—the anniversary of which I always call Mosquito Day—was, I think, a cloudy, dull hot day. I went to hospital at 7 a.m., examined my patients, and attended to official correspondence, but was much annoyed because my men had failed to bring any more larvae of the dappled-winged mosquitoes, and still more because one of my three remaining *Anopheles* had died during the night and had swelled up with decay. After a hurried breakfast at the Mess, I returned to dissect the cadaver (Mosquito 36), but found nothing new in it. I then examined a small *Stegomyia*, which happened to have been fed on Husein Khan, on the same day (the 16th)—Mosquito 37—which was also negative, of course. At about 1 p.m. I determined to sacrifice the seventh *Anopheles* (*A. stephensi*) of the batch fed on the 16th, Mosquito 38, although my eyesight was already fatigued. Only one more of the batch remained.

The dissection was excellent, and I went carefully through the tissues, now so familiar to me, searching every micron with the same passion and care as one would search some vast ruined palace for a little hidden treasure. Nothing. No, these new mosquitoes also were going to be a failure, there was something wrong with the theory. But the stomach tissues still remained to be examined—lying there, empty and flaccid, before me on the glass slide, a great white expanse of cells like a large courtyard of flagstones, each one of which must be scrutinised—half an hour's labour at least. I was tired, and what was the use? I must have examined the stomachs of a thousand mosquitoes by this time. But the Angel of Fate fortunately laid his hand on my head, and I had scarcely commenced the search again when I saw a clear and almost perfectly circular outline before me of about 12 microns in diameter. The outline was much too sharp, the cell too small to be an ordinary stomach-cell of a mosquito. I looked a little further. Here was another, and another exactly similar cell.

The afternoon was very hot and overcast, and I remember opening the diaphragm of the sub-stage condenser of the microscope to admit more light and then changing the focus. *In each of these cells there was a cluster of small granules, black as jet* and exactly like the black pigment granules of the *Plasmodium* crescents. As with that pigment, the granules numbered about twelve to sixteen in each cell and became blacker and more visible when more light was admitted through the diaphragm. I laughed, and shouted for the Hospital Assistant—he was away having his siesta. "No, no," I said, "Dame Nature, you are a sorceress, but you don't trick me so easily. The malarial pigment cannot get into the walls of the mosquito's stomach, the flagella have

no pigment, you are playing another trick upon me!" I counted twelve of the cells, all of the same size and appearance and all containing exactly the same granules. Then I made rough drawings of nine of the cells on page 107 of my notebook, scribbled my notes, sealed my specimen, went home to tea—about 3 p m, and slept solidly for an hour.

When I awoke with mind refreshed my first thought was, Eureka! the problem is solved! I seemed to have found in my sleep an explanation of the pigment. The flagellated spores grow in the gastric cells of the Dappled-winged Mosquitoes just as the young *Plasmodia* grow in the human blood-cells, and as they grow they absorb haemoglobin from the blood in the mosquito's stomach just as the young *Plasmodia* absorb it from the blood-cell (the "pigment," is of course nothing but altered haemoglobin). I was wrong, my cells were in fact the *female crescents themselves* which had been fertilized by the sperms of the male crescents (which we had called flagellated spores) and were now beginning to grow *still containing their original pigment*, in the gastric cells of the *Anopheles*. Scientifically they are called Zygotes. But any explanation was enough at the time, and I wrote that evening to my wife "I have seen something very suspicious in my mosquitoes today and hope it may lead to something." Then I added "Lately I have been putting together those rhymes I used to make on 'Exile'—you remember I think I will write them out fair." But another consideration struck me. If these cells were the parasites they should *grow in size* in the last remaining mosquito during the night, and I spent that night in an agony lest my sole surviving friend should perish and go bad before morning!

Next day I went to hospital intensely excited. The last survivor of the batch fed on the 16th, Mosquito 39, was alive. After looking through yesterday's specimen I slew and dissected it with a shaking hand. *There were the cells again*, twenty-one of them, just as before, *only now much larger!* Mosquito 38, the seventh of the batch fed on the 16th, was killed on the fourth day afterwards, that is, on the 20th. This one was killed on the 21st, the fifth day after feeding, and the cells had grown during the extra day. The cells were therefore parasites, and, as they contained the characteristic malarial pigment, were almost certainly the malaria parasites growing in the mosquito's tissues.

The thing was really done. As I said we had to discover two unknown quantities simultaneously—the kind of mosquito which carries the parasite, and the form and position of the parasite within it. We could not find the first without knowing the second, nor the second without knowing the first. By an extremely lucky observation I had now discovered both the unknown quantities at the same moment. The mosquito was the *Anopheles*, and the parasite lives in or on its gastric wall and can be recognized at once by the characteristic pigment. All the work on the subject which has been done since then by me and others during the last twenty-five years has been mere child's play which anyone could do after the clue was once obtained.

That evening I wrote to my wife "I have seen something very promising

indeed in my new mosquitoes," and I scribbled the following unfinished verses in one of my *In Exile* notebooks in pencil

This day designing God
 Hath put into my hand
 A wondrous thing At His command
 I have found thy secret deeds
 Oh million-murdering Death

I know that this little thing
 A million men will save—
 Oh death where is thy sting?
 Thy victory oh grave?

1869 — 1939

HARVEY CUSHING

Harvey Cushing, who died in 1939 at the age of 70, was a representative of that distinctive group of American doctors who succeeded in combining the "old humanities and the new science" in a most felicitous manner. Born in Cleveland in 1869, he had three generations of doctors behind him. After attending Yale College and Harvard Medical School, from which he graduated in 1895, Cushing went to the Johns Hopkins Hospital where under the influence of Halsted, Osler and Welch he began a career which was to lead him to eminence in his profession.

In addition to his abilities as a surgeon, Harvey Cushing also had conspicuous literary and artistic talents. His *Life of Sir William Osler* was awarded a Pulitzer Prize in 1926, and the sketches which enliven the diaries that he kept throughout his life evidence considerable graphic ability.

Under the influence of William Osler, Cushing early developed an interest in medical history, which led eventually to his *Bibliography of Andreas Vesalius* (1943) and the superb collection of books which he bequeathed to Yale University. In the "Apologia," which appears as part of the introduction to the *Bibliography*, he gives a delightful account of the development of his interests in medical books and Vesalius. A definitive biography by his colleague John F. Fulton was published in 1946.

WHEN my personal interest in Vesalius was first aroused I am unable definitely to recall. It must have been nearly 40 years ago, for I find that I came into possession of Moritz Roth's remarkable biography in 1900 which indicates that there must have been talk of the man probably at the Johns Hopkins Historical Club prior to that time. This may have been what led my colleague W. G. MacCallum, after a year of study abroad, to lug home and present to me in the autumn of 1903 an imperfect copy of the 1543 *Fabrica* which he had come upon that summer among some books for sale in the back of a blacksmith's shop in a side street in Rome.

That same summer Osler as usual had been brain-dusting abroad whence came the usual shower of postcards to the Baltimore stay-at-home. On one of them postmarked Guernsey, July 17th, he exclaims "I have bagged two 1543 *Fabricas*! 'Tis not a work to be left on the shelves of a bookseller."

The upshot was that several copies of this historically important work were spread for comparison on his dining-room table one evening not long after the opening of the winter semester. The best of them he promptly inscribed as a wedding present for L. F. Barker. The next best he swapped with me for the MacCallum copy.

Thus in the happy bygone Baltimore days those fortunate enough to come as latch-keyers under Osler's neighborly influence became inoculated with the bibliophilic spirit which has proved a solace for many of us in our later years even when it may not have developed into a hobby. Ere long a Vesalius Club was organized, and though it was shortlived, an impromptu talk was given at its first meeting by Dr. Welch on the man and his works. This is well remembered, not only for what he said, but because a few days later Howard A. Kelly left at my door with his card a superb copy from his own library of the 1555 *Fabrica* in contemporary stamped pigskin with clasps. So in those early days historically significant books might find their way to one's shelves, even though with an instructor's salary of \$100 per annum there might be cobwebs in the purse.

In the effort that will follow to place the published writings of Vesalius in proper relation to those episodes of his life of which there is contemporary record, I am fully aware that to the perspicacious symptoms of the slowly progressive though rarely fatal malady once vividly described by Thomas Frognall Dibdin will be disclosed. Dibdin, however, failed to point out that the Bibliomania, while more commonly a masculine ailment, easily leads to difficulties because of an even more serious counter-disorder which is prone to affect the distaff members of the family, who usually control the majority vote. They show an uncontrollable tendency to accumulate odds and ends that go under the general name of antiques which mysteriously find their way into the house late in the day by way of the garage after all identification tags have been removed. On the other hand a new old-book, unmistakable in its brown paper parcel and bearing unfamiliar foreign stamps, is handed in openly at the front door by the postman, who must wait while the maid rummages round to find two cents for excess postage, thereby advertising its arrival from parlor to kitchen. Thus, while the advantages, as is quite proper, are all on the side of the antiquing distaffers, most collectors of books, in self-defense, after obliterating from their recent acquisitions such highly interesting records of provenance as pertain to their source of origin and purchase price, conceal them on shelves in their so-called dens, fully convinced that they have made a better investment for the long pull than has the party of the first part.

1865 — 1945

ALFRED E HOCHÉ

Wordsworth's lines, "A mind forever Voyaging through strange seas of thought alone," characterizes the mature scientist. But to reach these heights, he must first achieve intellectual independence. This path is traversed not without psychological anguish and trauma, as Hoche testifies. Viewed retrospectively, however, all can be regarded with increasing wisdom and insight. In this passage, Hoche gives an acute analysis of motivations underlying scientific activity, and of the development of intellectual independence in a scientist.

MY TYPICAL inner experience is the feeling of inadequacy in the face of sudden, personally unpleasant human situations. Anyone who has known me only during the second half of my life will perhaps smile skeptically, but I have gradually learned to hide it. I was twenty-five years old before I even began to develop some degree of self-confidence. My youth was not such as to aid this development. I was always too young for my situation in life, and rarely really well physically. As a boy I was hindered by nosebleeds, that always began at an inopportune moment and which I ultimately came to regard as a stigma. In addition, I was generally more poorly clothed than my environment. An awareness of a hole in the seat of one's trousers, and that one's heels are rundown does not help one to move freely among those who are better situated.

Gradually, however, as I met with some success, there occurred what Busch, in his *Kritik des Herzens*, has so exhaustively established:

—später fand ich auf der Weide
ausser mir noch mehre Kalber,
und nun schatz ich, sozusagen,
erst mich selber

(—later I found that there with me
were other fools upon the lea,
and now, to say the least, I know
the worth of my own ego)

I saw that under ordinary circumstances I was able to accomplish as much as anyone else, and often with less inner effort. Nevertheless, I have retained one characteristic that I cannot overcome. In the face of insults I am unable to have immediately at hand the intellectual weapons for defense. I do not possess the appropriate toughness required for hard blows. At first a kind of shock sets in which paralyzes my mental processes, then follows the influence of an exaggerated sense of justice which raises the question whether the other party may not be right. The most vexatious memories are not those

of wrongs or injustices that one has committed, but recollections of situations where one met with lack of appreciation or injustice. Owing to this psychological constitution, I have throughout my entire life been a good hater, and am well acquainted with the mood expressed in these verses

Vergeben? nein, und kein Vergessen,
 die je mich krankten, will ich hassen,
 und musst' ich auch mein Heil verpassen,
 kann ich sie nur in Teufelsessen
 am Spiesse langsam rosten lassen

(Forgive? No, nor yet forget,
 For they who hurt me will I hate,
 Though it cost me my salvation
 Slowly roasting in damnation
 For the devil's delectation,
 Only so can I leave them to their fate)

To be sure, this is not a Christian thought, but then I have promised to be honest, and it is not my intention to write a devotional tract. Heaven has so frequently taken care of the revenge which I personally was unable to obtain that gradually—it sometimes takes very long for such things—I learned to see in this a kind of compensation. Most of those, who in the course of decades have done me a truly inexpressible wrong, have somehow met with a bad end—pure coincidence, of course, which only my emotion places in this satisfying light.

Likewise, in scientific work I did not at the beginning have the courage to assert myself. The novice who has learned to use the elementary tools, but who still carries along a large number of opinions based on authority, is at first satisfied when in his field he is able to maintain agreement between his own experiences and the prevailing theory. It is a satisfaction similar to that of traveling Englishmen who when viewing collections always place the greatest value on making sure that everything mentioned in Baedeker is really there. Gradually, however, one's own way of looking at things brings into being the doubts that are a necessary presupposition for every advance. Out of the efforts to prove them grows the scientific personality, until it ultimately ripens into convictions that are strong enough to maintain themselves against the normal rejection of the new. In this process, which stands out more or less distinctly in the life of every scientist, lack of a naive self-confidence was a hindrance for me. I recall very vividly the burning doubts that assailed me at the psychiatric meeting in Munich many years ago when new views on the structure of mental diseases that I presented (and which later achieved recognition) were unanimously rejected with an air that would have been more appropriate for the desecration of a sanctuary. The rejection showed itself even in the—compassionate—countenances of my friends. Later experi-

ences have made me psychologically independent of agreement or applause. I have found that generally I have been able to count on being right with an opinion in the long run, when I maintained it alone, and still better was the outlook when I was abused for holding this view. This sounds presumptuous, I know it, my friends, but I have so often underestimated myself that for once I can afford the pleasure of overestimating myself.

Indifference to the opinion of others develops hand in hand with the renunciation of attempts (to which younger people feel themselves irresistibly driven) to convert others to one's own opinion. Only rarely does one convince somebody by means of arguments. Such efforts resemble the fruitless work of the wind, before which the sedge bends for a moment only to return again to its former position. How few people are actually guided by rationally worked-out motives! Generally, force of habit, or suggestive impressions determine an action. One experiences these things, reflects on them, and leaves them alone. Consciousness of existing only once, and knowledge of the shortness of our lives—two elements of knowledge that only gradually become an integral possession of the self—shift our standards and endow the inner values with increased worth. The opinions held by other people become unimportant. In the case of productive persons the processes become complicated. Here—quite apart from the money-making motive—there is an interaction of various currents. One culminates in the desire to produce something of which one can be proud, something which receives applause, and exercises a certain influence, the other is based on the desire to have the work approved by one's own self and mind. In the latter case, the reward is the feeling of pleasure which accompanies every action corresponding to one's nature and special talents. Increasing wisdom and an insight into the limited and relative character of even the best that we can create leads us more and more to seek inner satisfaction in this way.

A clear-cut separation of motives underlying creative activity is not possible owing to the variety of materials involved in such activity, and the structure of the self. The manifold and intimate character of these interrelations will be realized if one raises the question: What intellectual activities would a person, who was the very last survivor on the earth, and thus subject to absolutely hopeless solitude, like to engage in? In this situation would Raphael still paint his Madonna, would Bach write his fugues, Goethe his *Faust*, Kant his *Critique of Pure Reason*? I leave the answer to the reader's imagination.

1876—1940

HANS ZINSSER

The world in which the scientist moves is one of research and learning. It is a world rather remote from the experience of most people, and for this reason the

scientist has a special responsibility to the society of which he is so important a part. This involves an explanation of the point of view, of the aims and values of the research scientist to the people with whom, in the last analysis, his work is concerned. In his autobiography, Hans Zinsser undertakes to do so for his own field, that of bacteriology.

AFTER his return from Russia, R. S. was content to settle down in his laboratory. He now spent some of the happiest years of his career reorganizing his teaching and picking up the threads of his investigations. While the experiences in the field had been sterile in the sense of scientific production, they had taught him a great deal about the manifestations of "herd" infections or epidemics and had stored his mind with unanswered questions that he now was eager to formulate in terms of experiment. He worked hard and steadily, but, as I stated at the beginning of this book, it was not easy to induce him to discuss the technicalities of his scientific interests. He believed that these belonged in the professional journals in which he published them, and that he could not tell about them in a popular way without appearing either to exaggerate his own professional importance or to make capital of the sensational interest which medical details appear to arouse in the public. I happen to know, however, that during these years he was engaged in theoretical studies on antibodies, on allergy in tuberculosis, began his work on typhus, and felt about for clues to the nature of the invisible virus agents. These were relatively tranquil years, as tranquil as he could live them—for his temperament was such that he never knew he was happy until later, and the past always looked better to him than the present. He loved his work, he enjoyed his students, he spent his spare time and money on horses, and he wrote a great deal about all kinds of things both in prose and in verse. But something was always irritating or exciting him. He was not a comfortable man to live with. He was either *himmelhoch jauchzend* or *zum Tode betrubt*. His state of mind depended a good deal on the success or failure of his experiments, and whenever, as often happened, a hopeful idea blew up in smoke and a lot of effort seemed to have been wasted, he became insufferable. At such times he drank a lot more than was good for him and spent his evenings writing sonnets—some of which were published and thought good by others, though never quite as good as he thought them himself. He always said that his poetry was best when he was able to attain just the right degree of intoxication. A sonnet usually cost him a quart of Scotch, and, since he favored the Shakespearean form, he never got the last two lines on the first quart. After he had worked himself to the second or third quatrain, he usually miscalculated, was too fuddled for the perfect ending, and put it off until the following evening. For prose, scientific or otherwise, as for riding horses, he believed one should be stark sober, when he was writing essays on educational subjects, he felt that a spot of beer put him into the solemn-ass mood and thus a little closer to the state of mind of the professional pedagogue.

He was really a very happy man during these years, and rather stupid in not realizing it. People were much better to him than he deserved, and those most intimately associated with him made allowances for his peculiarities and his failings. There were lucid intervals when he gratefully realized this. And as his life approached its end he often spoke to me with *Wehmuth* (there is no English word that exactly expresses it) of the chances he had missed of making others happy.

I have jotted down in his own language some of the things he talked to me about in our many evenings together during these middle years, when—for a time—he uninterruptedly led the life of a university professor.

While war service and epidemiological work have their adventurous charms, there comes sooner or later to the investigator trained in laboratories a hunger for his accustomed environment—a sort of nostalgia for the familiar smells of ether, phenol, formalin, xylol, monkeys, and guinea pigs, which are sweeter to the laboratory nose than attar of roses. Moreover, ideas have accumulated, new techniques have been devised, and the heart longs to get back to an occupation which, once in the bones, is harder to shake off than a beloved vice.

There is in this profession, especially as it concerns itself with infectious diseases, a fascination which holds the spirit with feelings that are not exaggerated by the word “passion”, indeed, like the happiest personal passions, it feeds on the intimate daily association of long years and grows, like love, with an increasing familiarity that never becomes complete knowledge. For what can be more happily exciting than to study a disease in all its natural manifestations, isolate its cause, and subject this to precise scrutiny and analysis, to grow it apart from its host, study its manner of multiplication, its habits under artificial conditions, its changes, its possible toxic products, then to carry it back to the animal body and follow the processes by which it injures and kills, explore the details of animal defenses, and pursue it again into the epidemic, examine its manner of conveyance from case to case, its relationship to water and food, animal carriers, insect vectors, its geographical, climatic, and seasonal distribution, the laws of its epidemic waves, and then, with all the weapons of the knowledge gained, to assist in its arrest and circumvention, even contribute to protection and possibly individual cure. For few diseases has all this been entirely done, and in those few in which all necessary knowledge is available—as, for instance, in diphtheria and small-pox—the conquered territory must be occupied by garrisons which one helps in training and disciplining. For it is a war without armistice, and continuous mobilization is the only guarantee of safety. Once one is thoroughly involved in this work, it gets into the blood and few either want to or can escape from its fascinations.

And the opportunity for living such lives is given to us bacteriologists by the universities. They supply our workshops and our equipment, they risk

money in the venturesome investment of our originality and ingenuity, and leave us free, with the wide ranges of the unknown, to wander and prospect whither the trails lead us. All they ask in return is a little teaching, to train others to take up where we fail, and for this they pay us besides. We are among the blessed ones who, in a perturbed world, are allowed to do the work we love best. We should be very happy people.

My insect hunting has been concerned mainly with bedbugs, lice, ticks, and fleas, though lately also with mosquitoes. But the lice and fleas have furnished the most satisfaction. Bedbugs are a vulgar game. They are dull beasts and offer little play for skill or intelligence, are easily sneaked up on, and docile when caught. Fleas are the noblest game of all. They have speed and elusiveness, and, despite the evidence of flea circuses, are not easily domesticated. If they ever get loose, as a thousand or so once got loose in my laboratory, it is worse than escaped monkeys, and it's *sauf qui peut*. With fleas it is a matter of *toujours de l'audace*. They attack by the formula of Marshal Foch: "If you are driven back on the right flank, and repulsed on the left, attack in the centre." When they attack in number, nothing helps except wing shooting with a Flit pump.

The louse is not so active, but by far wiler. In a manner, it is the most thrilling game—especially if dangerously infected. It demands unflagging vigilance. One summer I was feeding Arab lice—three hundred of them—on monkeys. The idea was to find out whether one could keep a louse from a human being alive on monkey blood, because that would have facilitated a number of important experimental projects. I picked these lice originally out of the beards of Arabs, caged them, and now—day after hot day, in the Tunisian summer—I sat over equally uncomfortable fettered monkeys, picking up my lice with forceps, setting them, twenty or so at a time, on a monkey's belly, and, when they were red and swollen, counting them one by one back into the boxes. To lose one would have been a calamity. And how they can scam when they start for the underbrush! It takes steady nerves, and three or four of the men engaged in similar occupations in the course of ten years or so were caught off their guard and got typhus in consequence. In this case, my scheme did not work. My lice didn't do well on monkey blood, and the plan had to be abandoned.

But I don't want to be sensational about this. I wish merely to make the point that it has sporting advantages over the big-game business.

When one is hunting insects in epidemic zones, the circumstances are usually such that one has no difficulty whatever in finding the game. The problem is quite the opposite—that is, one tries to avoid running into it unexpectedly. One can pick it up almost anywhere in the luxuriant underbrush on the faces, heads, chests, or backs of patients, or in the fur of trapped animals. It often becomes necessary, however, to capture a stock of the responsible insects from regions in which no disease exists, so that one may establish

colonies of uninfected specimens for experimental purposes This may be quite another matter, particularly difficult in some of our highly "hygiened" American cities, where bathtubs and soap have become obsessions in the last fifty years Michelet said, writing of Paris before the Revolution "Mille ans d'histoire at pas un seul bain" This was exaggerated, because there is reliable evidence that in the time of Louis XIV there were bathing places along the Seine But with us in America, the thing has gone to the opposite extreme, and while the "cold bath in the morning" situation is probably to a large extent swank, the hot bath once a week or so has penetrated to the lowest orders of society The result is that in Boston at least the catching of a louse requires a high degree of ingenuity—to say nothing of tact Bedbugs one can always obtain locally by knowing where to go Fleas one can have shipped from the South For ticks of certain varieties, all one needs to do is to take a walk on Cape Cod and then pick them off one's pants But lice—! Well, Boston, is, as I have said, being much maligned by novelists and Western academicians Harvard and the New England states in general possess some subtle quality which gets under the skins of the rest of the country But from one point of view, Boston is unimpeachable Let me challenge Mr Sinclair and Mr Marquand to try to catch a louse in Boston I'd like to see how far they would get Of course, though cleanliness may be akin to godliness, it is not impossible that it is in inverse proportion to intellectual energy and artistic perception The intellectually and artistically gifted people I have known in different parts of the world have often been the most unwashed I once had a Southeastern European in my laboratory who was a gifted scholar and played Chopin as few can play him, yet who never learned to pull the string in the bathroom Yet this is an impression, and it would be hard to establish a causal relationship between the two conditions

But to come back—to catching lice in Boston I needed a supply of local lice in which all possibility of previous typhus infection could be excluded I knew where I could get the little lads in New York—in a clinic in the Broome and Essex Street district, where, years before, I had picked them up often without wishing to But the New York lice could not be regarded as reliably unimpeachable I needed the Caesar's wife kind of lice, and Boston was the place—if any—to find them I tried out bedbug preserves, lodging-houses, and so forth No luck I sent my scouts into those quarters of the city where the cover and exposure indicated possible pasturage Not a spoor was uncovered There are imaginable difficulties One cannot accost likely groups of people, even in clinics, and say "Do you mind if I examine your head, to see whether you are lousy?" There is a social implication in this which is resented As a last resort, I sent out my most persistent and skillful associate, Dr Maximiliano He followed many a false trail Finally, exhausted and without hope, he was almost ready to give up

Maximiliano was standing on the corner of Washington and Summer Streets, trying to make up his mind what to do next There was always a

tragic air about him, for he was small and dark, with an intense look in his eyes—partly because he suffered from chronic gastritis, owing to putting chili sauce on all his food, even soup and oatmeal, and believed that he was incubating a cancer of the stomach. He stood in one place so long and looked so *désolé* that he attracted the attention of a policeman, who we found out later was Officer Clancy of the Joy Street Station. Just what he thought it is impossible to tell, but he approached Maximiliano and said —

“Have ye lost yer way, young fellow?”

Maximiliano, in his Latin despair reacted with passion

“In all Boston, Mr. Officer,” he said, “I cannot discover a louse.”

“A what?” asked Clancy

“A louse,” replied Maximiliano

“Look here,” thought Clancy, “this guy is nuts.” But he was a conscientious soul. He asked, “An’ what do ye want with a louse, me lad?”

Maximiliano explained. He said that he was a “scientific.” He described the epic magnitude of the typhus problem. He told of the work upon which he was engaged at the Harvard Medical School. He expounded the need of normal lice, told how he would breed them on his leg, how he would lay them on little cakes of ice to anaesthetize them, and inject them into the rectum with typhus virus.

Clancy scratched his head. Maximiliano sounded crazy, but there was a convincing enthusiasm about him. Gently Clancy suggested that they go to the Station and consult the Captain. To the Captain the whole matter was recapitulated. “You mean to say you stick a glass tube up a louse’s behind?” he asked. He had conveyed many sufferers of hallucinations to the Psychopathic, but this was a new one.

“If you will come to the Harvard Medical School, I should consider it a distinguished honor to demonstrate to you our procedure,” declaimed Maximiliano.

The Captain was captivated by “the cause of science” to which Maximiliano recurred repeatedly. “Are there any lousy guys on your beat, Clancy?” he asked.

“Well, there’s an old coon,” said Clancy, “that sells pencils down near the South Station, who I think might fill the bill. We might give him the once-over.”

With the Captain’s blessing, Maximiliano and Clancy wandered the streets leading to the South Station. On Essex Street they came upon the pencil vendor. He looked promising, but Maximiliano could not get close enough. Mr. Collins was shy of policemen. Clancy engaged him in conversation, Maximiliano edged closer. Eureka! There were nits in the crinkly hair. Maximiliano got excited. He took out his little pillbox and a small scissors. Mr. Collins backed away.

“I ain’t done nothin’,” he exclaimed. “What you-all tryin’ to do?”

"You ain't done nothin'," said Clancy, "but you'd better come to the Station. The Captain wants to talk to you."

Mr. Collins was frightened. But Clancy was determined. Together they all three made their way to the Station. By the time they got there, Mr. Collins was in a state of resentful jitters.

"Now, Collins," said the Captain, "there ain't no charge against you. But we've got to look at your head in the cause o' science."

"I ain't done nothin'," repeated Collins. "I'm an American citizen and I got my rights. I dunno what youse all talkin' 'bout de cause o' science."

"Collins," replied the Captain, "be a sport and let this Spanish professor look at your head."

"You tell dat man to keep off o' me with them scissors."

"Collins!" The Captain was now stern. "I place you under arrest in the cause o' science."

As he was being led away to a cell, Collins weakened. Maximiliano took him to the window and got his nits. Collins was discharged, and Maximiliano came back in triumph. He and Clancy became fast friends. The Captain had called up the college and I tried to assure him that Maximiliano was quite sane, but I don't know whether he believed me. I will pit the kindly intelligence of the Boston police force—always excepting traffic officers—against any in the world.

1871—1945

WALTER B. CANNON

Henri Poincaré believed that the distinguishing characteristic of mathematical discovery is "apparent sudden illumination." This is true in considerable degree, however, not only of mathematicians but of scientists in many other fields. Apparently the scientist, like Coleridge, lowers his problem into the "deep well of the *Unconscious*" where it is organized and integrated, emerging as a flash of insight, frequently during sleep. Walter Cannon presents an interesting case of such experience.

Besides illuminating the problem of creative thought in science, Cannon also has some penetrating comments to make on medical teaching. Fully aware that academic teachers have a tremendous responsibility to their students, he emphasizes that the basis of education is not the imparting of facts, but rather the inculcation of a critical approach, and a recognition of social responsibility.

HOW do investigators obtain insight into ways of possible progress toward acquiring new knowledge? Do they sit down and think intensively about the existing status and what the next move shall be or do they count upon revelation for hints and clairvoyance? Evidence indicates that reliance has been placed on both methods.

From the years of my youth the unearned assistance of sudden and unpredicted insight has been common. While a student in high school I was occasionally puzzled by "originals" in algebra, the solution of which was not at all clear when I went to sleep at night. As I awoke in the morning the proper procedures were immediately evident and the answers were quickly obtained. On an occasion I was handed a complicated toy which was out of order and would not operate. I examined the mechanism carefully but did not see how the defect might be corrected. I resorted to sleep for a solution of the problem. At daybreak the corrective manipulation appeared thoroughly understandable, and I promptly set the contraption going.

As a matter of routine I have long trusted unconscious processes to serve me—for example, when I have had to prepare a public address I would gather points for the address and write them down in a rough outline. Within the next few nights I would have sudden spells of awakening, with an onrush of illustrative instances, pertinent phrases, and fresh ideas related to those already listed. Paper and pencil at hand permitted the capture of these fleeting thoughts before they faded into oblivion. The process has been so common and so reliable for me that I have supposed that it was at the service of everyone. But evidence indicates that it is not.

According to my experience a period of wakefulness at night has often been the most profitable time in the twenty-four hours. This is the only credit I know that can be awarded to insomnia. As an example of an idea which came to me in one such illuminating moment, I will describe a device that was used in the laboratory to obtain an automatically written record of the clotting of blood. It consisted of a very light lever with the long arm ending in a writing point. The long arm was not quite counterweighted by a fixed load on the short arm, but when in addition a small wire was hung on the end of the short arm it slightly overbalanced the other side. The wire was so arranged that it dipped into a small glass tube containing a few drops of blood freshly taken from the running stream in an artery. A check on the long arm prevented the heavier short arm from falling. When the check was lifted, however, the short arm fell and the wire descended into the blood as the writing point rose and wrote a record. This showed that the blood had not clotted. The check was then restored, a minute later it was again lifted and again a record was written. The process was repeated thus at regular intervals. As soon as the blood clotted it supported the light wire and, now, when the check was raised, the heavier long arm did not rise and the fact that the blood had turned to a jelly was registered on the recording surface. All this was presented to me as a complete mechanism in a brief period of insight when I awoke in the night.

Another example I may cite was the interpretation of the significance of bodily changes which occur in great emotional excitement, such as fear and rage. These changes—the more rapid pulse, the deeper breathing, the increase of sugar in the blood, the secretion from the adrenal glands—were very diverse

and seemed unrelated. Then, one wakeful night, after a considerable collection of these changes had been disclosed, the idea flashed through my mind that they could be nicely integrated if conceived as bodily preparations for supreme effort in flight or in fighting. Further investigation added to the collection and confirmed the general scheme suggested by the hunch.

1873 — 1945

S JOSEPHINE BAKER

Emerson remarked that "the party of conservatives and that of innovators, are very old, and have disputed the possession of the world ever since it was made." The paths of innovators, however, are not often strewn with roses, for progress can only work its way through the inevitable obstructions placed in its path. What this means in a concrete instance may be seen from Josephine Baker's experiences in New York and Philadelphia.

IN THE spring of 1914 I received a letter from the Philadelphia College of Physicians asking me to read a paper before them on some aspect of my child health work. I assumed that the Philadelphia College of Physicians was about the same as the New York Academy of Medicine, an institution with which I have had many contacts, both friendly and otherwise. When I reached Philadelphia, however, there was a note waiting for me at my hotel asking me to dine with twelve of the College doctors at the Union League. I was the only woman in the clubhouse. From the way the place felt and the way the members' faces froze into paralytic astonishment as I passed, I suspect I was the only woman who ever *had* been in the clubhouse. The dinner was a highly formal, extremely enjoyable, but definitely stately occasion. I could not understand why they were making so much social fuss over the mere reading of a paper before a first-rate medical society, or why I had been honored with this exclusively male society.

After dinner, my twelve hosts formed up in a column and escorted me in an impressive procession of motor cars to the College itself. There were no women in the audience there either. Then the President of the College rose to introduce me to this solemn assemblage of medical men, and they *were* an impressive-looking group.

"Gentlemen," he said, "this is a remarkable occasion. For the first time since the Philadelphia College of Physicians was founded in 1787, a woman has been allowed to enter its premises." I learned privately afterwards that it was only after months of debate that the College had decided to invite me at all.

That was more than half a century after Dr. Blackwell had started women in medical practice in America. The name of Pankhurst was already a household word wherever newspapers were read and periodicals of all kinds had

been talking about the New Woman for thirty years. But that is not to be taken as evidence of peculiar conservatism, in Philadelphia I was presently to encounter a less gentlemanly version of the same tradition among medical students at the New York University-Bellevue Hospital Medical School in my own New York.

There were several absurdities about that incident. It all began when Dr William H. Park, who was both dean of the NYU medical-school and laboratory-director in the New York Department of Health, asked me to lecture on child hygiene in a new course the school was giving to lead up to the new degree of Doctor of Public Health. I reflected that presently I would be taking into the Bureau new men who could write Dr. P.H. after their names, whereas I would be without that extremely pertinent degree. So, in the interest of discipline, I offered Dr. Park a bargain, I would give those lectures on child hygiene at Bellevue if he would let me enroll in the course myself, so I could take a Dr. P.H. degree too. He refused. The idea of letting me take the same course in which I was lecturing was not what bothered him. It was the college regulations forbidding women in any courses whatever. I can hardly be accused of acting unreasonably because I declined to act as teacher in an institution that considered me unfit for instruction.

Dr. Park tried for some time to find someone to lecture in that part of the course. No one would. Child hygiene was not as well known a subject then as it has since become. So he returned to me and again I refused except on that one condition and the argument went back and forth until we were all heartily sick of it. Finally the college surrendered. I was to be allowed to take the two-year course in public health and get my degree. Naturally they could not admit me and deny entrance to other women, so another set of long-barred doors opened to the female of the species.

With that farcical beginning, I lectured to Bellevue students for fifteen years. They never allowed me to forget that I was the first woman ever to impose herself on the college. Their method of keeping me reminded derived directly from my first lecture, which was a nerve-racking occasion. I stood down in a well with tiers of seats rising all around me, surgical-theater fashion, and the seats were filled with unruly, impatient, hardboiled young men. I looked them over and opened my mouth to begin the lecture. Instantly, before a syllable could be heard, they began to clap—thunderously, deafeningly, grinning and pounding their palms together. Then the only possible way of saving my face occurred to me. I threw back my head and roared with laughter, laughing at them and with them at the same time—and they stopped, as if somebody had turned a switch. I began to lecture like mad before they changed their minds, and they heard me in dead silence to the end. But, the moment I stopped speaking at the end of the hour, that horrible clapping began again. Frightened and tired as I was from talking a solid hour against a glowering hostile audience, I fled at top speed. Every lecture I gave at Bellevue, from 1915 through to 1930, was clapped in and clapped out that

way, not the spontaneous burst of real applause that can sound so heart-warming, but instead the flat, contemptuous whacking rhythms with which the crowd at a baseball game walk an unpopular player in from the outfield

1869 — 1932

ALFRED GROTJAHN

Social medicine, as a special field of medical activity, is of recent origin, having arisen as a resultant of the industrial revolution on the one hand, and of the advance of medicine on the other. This development occurred most extensively in Germany, and was in considerable degree the work of one man, Alfred Grotjahn. His father and grandfather were doctors, and he followed in their footsteps. Berlin attracted him, and as he had developed a deep interest in social problems, he soon joined the Social Democratic Party. More or less intuitively, he developed a social approach to the problem of disease, but realizing that he lacked training in the social sciences, Grotjahn enrolled for further education under Gustav Schmoller, the distinguished economist.

During the first decade of the present century, he applied his training to the establishment of the field of social medicine (which he preferred to call social hygiene). Grotjahn occupied the first chair of social hygiene established at the University of Berlin in 1920, and taught there for many years. In his autobiography *Erlebtes und Erstrebtes (Aims and Achievements)*, Grotjahn offers an interesting picture of a medical specialty being born.

DURING the first decade following the turn of the century, I helped to found the specialty of Social Hygiene [called Social Medicine in the United States] by means of various undertakings, none of which was completely successful. Nevertheless, looking back upon them, I believe I can well maintain that their influence was probably greater than that of later and more successful enterprises. Pioneering efforts are characterized by the fact that they are rich in disappointments, fortunately, however, it is the nature of the pioneer, motivated by some inner compulsion, not to permit such disappointments to turn him from his chosen course.

During the second decade, especially during the years preceding the Great War, visible and lasting effects appeared. These were linked chiefly with the appearance of my book *Soziale Pathologie* [Social Pathology], of which the first edition was published in 1912. In it I attempted to present monographically a pathology of human diseases from a social viewpoint. The conviction that numerous pathological conditions arise because of an unfavorable environment, and that their course is strongly affected by social influences, is not adequate, unless these conditions are studied in detail. For only in this way can one determine with precision the possibilities of actively influencing such conditions by social hygienic measures. There are two ways in which this can be done. In the first place, one can start from some social phenomenon.

and determine its relations to the diseases in question. Secondly, however, the pathological condition itself can be taken as the point of departure and all the relations investigated which this disease has to various social phenomena. This second path was the one I took in my *Soziale Pathologie*, because it enabled me to show not only how various pathological conditions are partially or completely determined by social circumstances, but also how various social conditions are determined by a specific disease. In this way it was in large measure left to the subjective judgment of the author, as to how broadly or narrowly he would draw the boundaries of this immense field. As I had the courage to include the medical specialties, I was able to make only brief statements for each disease, and had to omit much that deserved to be mentioned. In order not to endanger the compactness of the whole, I could not make the book as extensive as I wished, nor would I have been in a position to do so, for no single person is in a position to encompass all the special fields of medical practice which, as for instance, pediatrics or venereology, have particularly numerous social hygienic relations. It was therefore a special pleasure for me to be able to convince I. Kaup, who had been called from Austria to the Prussian Central Office for Public Welfare, to issue with me a *Handwörterbuch der Sozialen Hygiene* [Encyclopedia of Social Hygiene], which we were able to complete in two thick volumes very soon after the appearance of my *Soziale Pathologie*. We had gathered about fifty collaborators, and were well able to say that in this encyclopedia we had presented practically exhaustively the status of social hygiene as it existed in Germany immediately before the war.

I would not have been able to carry out the work connected with the writing of my *Soziale Pathologie*, and the editing of the *Handwörterbuch der Sozialen Hygiene*, concurrently with my extensive medical practice had it not been for the indefatigable secretarial services of my wife. She alone made it possible for me to take advantage of the brief free periods in my practice and of the evenings so that the literary work could be completed without neglecting the demands of the day.

Finally, Kaup and I succeeded in obtaining official recognition of social hygiene alongside of experimental hygiene, which until then had been exclusively cultivated at the institutes of hygiene, we both found sensible institute directors who helped us to obtain teaching appointments at the leading universities of Berlin and Munich.

1891 —

HENRY E. SIGERIST

Medicine is more than just the diagnosis and treatment of disease. Medical practice, in its broadest sense, involves social relations, economic activities, industrial practices, and the many other elements that enter into the going concern that we

call our civilization. This approach characterizes the studies in medical history of Dr Sigerist. In the following selection, he traces his intellectual evolution, and presents his views on the teaching of students.

IN 1921 at the age of thirty I felt sufficiently prepared to apply for an academic position. I was appointed *Privatdozent* at the University of Zurich where I had a small but devoted group of students. When Sudhoff retired in 1925 his chair and the directorship of the Leipzig Institute were offered to me. It was not an easy job to be the successor of such a great man. I realized that the task was not to imitate my predecessor but to preserve the high standard of the Institute while developing it along my own lines. Sudhoff was primarily interested in the philological side of medical history, in texts and documents that he published by the hundreds. I had become increasingly interested in the sociological approach to history and in the sociology of medicine. I saw that the application of medical knowledge to society was made so difficult by a variety of social, economic, political, religious and philosophic factors that had to be investigated if progress was to be achieved. Without neglecting philological studies I endeavored to develop the Institute more and more along the sociological line. My book *Man and Medicine* written in those years reflects this attitude.

It was in 1927 that I first came in touch with *William H. Welch*. He had done more for the development of scientific medicine in America than anybody else, and now nearing the end of his career he intended to establish at the Johns Hopkins University in Baltimore, with which he had been connected since 1884, an Institute of the History of Medicine similar to that in Leipzig. He was travelling in Europe purchasing books for the new Institute and came to Leipzig to discuss his plans with Karl Sudhoff. I was in touch with Dr. Welch from 1927 to the time of his death in 1934 and although I cannot claim him as one of my teachers I learned a great deal from him as everybody did who had the good fortune to be close to him. As a matter of fact, I wished I had learned more from him, particularly his unaggressive way of attaining an end by diplomatic means. Temperaments, however, are different.

The Johns Hopkins Institute was opened in 1929. Sudhoff went to America for the occasion. Two years later in 1931 I was invited as visiting lecturer. I spent two months at the Institute whereupon I went on a long lecture tour through all sections of the United States. And while I was travelling I was offered Dr. Welch's chair.

I have a particular grudge against textbooks, the only literature ever consulted by many students. Instead of reading Plato or Newton the student reads about them and thinks that he knows them if he is able to repeat a few judgments read in a book. The textbooks present a subject carefully digested and in a simplified way. They read without effort and are forgotten over

night Do not misunderstand me There are excellent textbooks and when used judiciously they have an important function to fulfill They allow a rapid orientation over a wide field But they can never replace the study of original texts

When a publisher wishes to recommend a book he advertises it as being "highly readable" He may even add that it is written in a "delightfully informal way" And when a reviewer wants to praise a book very highly he emphasizes its readability, by which he means that every fool can read it without effort And yet we all know that the books that contribute most of the formation of our minds, the books that have made history, are anything but "highly readable" They are books with which we struggle, that we read and reread with pencil in hand, books that we have to conquer page by page But once we have conquered them we possess them Many subjects are difficult by nature and a presentation ceases to be true when it is oversimplified No knowledge can be obtained without labor and we should not be afraid to require great efforts from our students

VI

THE DOCTOR MARRIES

A single man resembles the odd Half of a Pair of
Scissors If you get a prudent, healthy Wife, your Industry
in your Profession, with her Economy, will be a fortune
sufficient

Benjamin Franklin

Whoever has troubled to look at the history of manners and customs is well aware that attitudes toward marriage have varied considerably at different times under changing social and economic conditions. Nor is it in any way startling to find that in courtship and marriage, doctors have faithfully shared the attitudes of the periods in which they lived. From the Renaissance until well into the nineteenth century, marriage was regarded as above all a social condition required by the necessities of economic life, to be established on a commercial basis. In fortunate instances, marriage might also be a union of affection, but to demand that love be an integral and necessary part of marriage went too far. Even when mutual affection existed, marriages were arranged between families.

These views were not limited to men. Mrs. Astell, an eighteenth-century Englishwoman, in her book *Some Reflections Upon Marriage* (1730), explicitly points out that marital "Happiness does not depend on Wealth," but also remarks "For pray, what do Men propose to themselves in Marriage? What Qualifications do they look after in a Spouse? What will she bring? is the first Enquiry. How many Acres? Or how much ready Coin? Not that this is altogether an unnecessary Question, for Marriage without a Competency, that is, not only a bare Subsistence, but even a handsome and plentiful Provision, according to the Quality and Circumstances of the Parties, is no very comfortable Condition. They who marry for Love, as they call it, find Time enough to repent their rash Folly, and are not long in being convinced, that whatever fine Speeches might be made in the Heat of Passion, there could be no real *Kindness* between those who can agree to make each other miserable."

In varying degree, these sentiments and attitudes are represented in the marital experience of Felix Platter, Johann Dietz, Jean Antoine Chaptal, Jons Jacob Berzelius, and Christoph Wilhelm Hufeland.

1 5 3 6 — 1 6 1 4

FELIX PLATTER

AN ABUNDANCE of presents were brought to the wedding, of these I received only a small goblet and two ducats. The remainder my father took to use as far as possible in defraying the expenses. Subsequently, as soon as I earned something I still had to pay back a good deal for my clothes. My father also took the 100 gulden of my wife's dowry, and used them too in paying off debts. My father-in-law did not give me any presents, for as he afterward pointed out he had given me five gulden for my doctor's banquet [the dinner given by all newly graduated doctors] and I should be satisfied with that. My wife brought with her some nondescript household utensils, an old pot in which her pap had been cooked when she was a baby, a wide wooden dish

in which her mother had received her food when she had been in childbed, and some other useless dishes which she put behind a screen in our room. Thereupon, the housekeeping was set up, which my wife was to arrange and to supervise. There were all sorts of things to think about. For instance, my father also had boarders and all kinds of trash in the house so that we young married people were both equally plagued. We would have preferred to be alone in our household, but we were unable to do this, and so we had to remain for almost three years in my father's house, where I had to make shift with my chamber and the lower room for patients. At times there were arguments because I could not contribute anything to the larder, as I had enough to do to clothe ourselves, and to save some money to pay what I still owed for my clothes in the shops. Whenever I did not do so, it was cast in my teeth. Thus, from time to time, there were squabbles such as commonly occur whenever old and young live together. My wife would have preferred that we should live alone. She was satisfied to get along on very little. If my father would give us the dowry that he had promised, and her dowry of 100 gulden, we would manage with it. My father, however, could not do this because he had neither ready cash nor banknotes. Moreover, I did not want to anger my father. I therefore did my best to smooth things over by telling my wife that we would do better to wait until my practice improved. All this worried me because I loved her and would have liked to keep her in a manner befitting a doctor's wife. For this reason also I did not address her familiarly with "thou" for a long time, but rather respectfully as "you." My father did not like it and felt I should not act in this manner. My housekeeping was thus beset from the very beginning with all kinds of distress and disappointment.

1665 — 1738

JOHANN DIETZ

THE good God may so have ordained it, that I after so many fine opportunities and alternatives, was to maintain a poor widow with three small and as yet uneducated children, whom it fell to me to bring up. For although I had had many opportunities, which should have been profitable enough, I was at last captured by the women. My aforementioned sponsor lost no opportunity of singing the praises of Mistress Watzlau. She had undoubtedly set the scene when she one day invited me into her garden. There was the widow referred to, with whom I readily got into conversation. And she, over a glass of wine, so far ensnared me that the matter was settled once and for all. NB — The moral of which is: One should look before one leaps, and also, when a woman does the courting the match seldom turns out well. They say the nightingale has a most beautiful song, but is a foolish bird, and allows itself easily to be caught.

And so it was with me For I gave her a large locket, but she gave me only a ring Thereby I was bound in a slavery from which I would very gladly have escaped when I learned the woman's actual circumstances But this she absolutely would not hear of Strangely enough, when I told my father of this, he asked "What are you going to do with an ill-tempered woman and her children? What profit there is is not hers, but the children's, and there are many debts, and she has bad, quarrelsome brothers and sisters and friends"—And all that he said was true but it was too late I delayed the wedding as long as I could, and would rather have remained as I was, and it had, indeed, been better had I done so

But now, alas! I received advice from every side, and the matter was laid before me in the rosiest colours Even my father himself now said "What do you think to do now? The thing is done, you won't get away from her, or avoid marrying her, your best hope is in God, perhaps matters will improve, or perhaps she will not live long"—But all these calculations miscarried

Yet at first she spoke to me affectionately, caressed me, and made excellent proposals, as that she would make everything over to me by means of a marriage settlement And on the children she wished to settle a given sum of their father's large portion, as they must come first

I, too, wished the marriage settlement to be in legal shape before the wedding But a hundred excuses were advanced by her guardian, Dr de Wedig, and it was continually postponed, from one day to another At last, after numerous promises, it was postponed until just after the wedding And there I was at last thoroughly caught This was on the 3rd September, in the year 1694

In the meanwhile the wedding was arranged, and I had the banns of marriage published The wedding day approached (and it was a day of an unlucky conjunction for the moon stood in the house of the Scorpion and *Saturnus* with *Mercurius* was in the sextile aspect) When I looked at the calendar I was startled, yet, thought I, one must trust more fully in God, for there was not a groschen of money, and I had been obliged some five or six weeks previously to get some meal and bread into the house, I had also been attending to the customers myself, or they would have left us entirely, *summa*, everything depended on me and my money And the whole wedding had to be arranged at my expense, moreover, my father sent me six hares, which I was to keep in a cellar, but my betrothed thought it would be better to hang them in a draught in the house, and that it would show people that we lived in style if we had hares in the house Yet that very day a beggar came that way and knocked down the whole six and was kind enough to take them all away with him, so we had no hares, and had to send into the city for them and pay the highest price That was one thing Then I, too, wanted to make a show of good living, and had invited a baron, a count, two professors, some members of the Council, and some priests and other distinguished persons, and from many of these I received from six to eight thalers as a present, but

from some I received as a mark of their friendship, sixteen groschen! However, I was contented, and danced attendance upon them at table, but my bride sat at table in her finest clothes

The wedding was barely over when there were signs of bad weather I had not behaved properly to this one and that one of her friends, and had not shown them sufficient attention!—Her father, in whose presence she had belittled me, was good enough to say that the house was his, and he meant to turn me out of it, and would not rest until he had driven me out of doors—The Sister, Mistress Hans-Jochim, declared that she wanted the hundred and fifty thalers that were owing to her At the same time the other sister, Mistress Schure, wanted her note for a hundred thalers—They had also stirred up the apothecary, who wanted twenty-six thalers for his medicine, and I know not what else was required of me!

I laughed at this and saw that I had been defrauded The wife was anxious and distressed and turned to me with pleasant words I must come to their aid!—for she knew that I had brought nine hundred thalers in cash with me I stepped in and paid all that was owing

And now to come to the end, and to the death of my wife She became a great sufferer, although her son-in-law and her daughter did all that they could for her She had a breaking out in both legs, which ejected stinking matter in great quantities, so that no one could remain with her, although she had her own waiting-woman

At last (I do not know why she did this) she sent for me Weak as she was, she sat upright in bed and drew me to her, and embraced me so closely that I would never have supposed that she could have had such strength, and said “Husband, a thousand good nights, my dear husband, forgive me, if I have done anything ill, I am heartily sorry for it Wicked people have persuaded me to do it If I were going to live I should try to do better! But now it is too late Do not let my children suffer for it”

Therewith she prepared herself for death and departed this life that very night

I had her honorably buried with coaches and gave her daughter ten thalers for mourning and towards the servants' mourning

And here I should like to say, that although my life with her was so wretched, her death touched me so closely that I shed many tears over her And now that I too was an old man I could have wished that she might have remained with me in peace and quiet, as she very well could have done For she was in other respects a clever and able woman and an excellent cook, so that the Barbers' Guild were always delighted when they dined at my house, as they very often did during the time when I was Guildmaster

I and my house servants thought that she would haunt the house, for during her lifetime she could not bear anyone else to enter it But nothing was seen or heard, thank God!

Now Mistress Schmidt finally removed what little she had left in my house, and gave me such old clothes and bedding and rooms as pleased her And of the thirty-five years' spinning and sewing of my wife and my maids, she took what she pleased' For my wife was seventy-two years and six months old when she died, and had contrived to put by quite a store of things She died in the year 1726, on the night of the eleventh of August, at a quarter past four

1756 — 1832

JEAN ANTOINE CHAPTAL

IN ORDER to cultivate my tastes in a more independent manner and to seek refuge from my uncle's persecutions, I decided to marry He consented, and in 1781 I married Mlle Lajard, daughter of one of the most respectable merchants of Montpellier M de Cambacérès asked for my wife in my behalf, his brother, the cardinal, gave me 120,000 francs, and my wife received a dowry of 70,000 francs I went to live at the home of my father-in-law, and all these matters were arranged in such a way that I had enough freedom to pursue my interests, and sufficient means to carry on my work This marriage became a source of happiness for me The character of my respected wife was marked by intelligence, charm, conduct that was always irreproachable, inexhaustible kindness, and a gentle and even humor Unceasingly occupied with her children, her husband, and domestic cares, I never saw her diverted from her holy duties except to relieve the unfortunate, to bear consolation to the afflicted, and to participate in and to alleviate their troubles Naturally sympathetic to the weaknesses of others, I never, no, never, heard her blame or ridicule a woman whom she knew, or give credit to any stories of guilty or dishonorable action It was in this school that she raised her daughters, who, following her example and never abandoning it, were trained in the practice of all the domestic virtues which alone bring happiness, because they are for all the occasions of life

1779 — 1848

JACOB BERZELIUS

TWENTY-FIVE years earlier, in view of the happy family life of a foreign scientist I had asked him whether on the basis of his experience it was right for an active and zealous scientist to marry He had given me the following answer If my question was meant to secure advice for myself, he could not advise me either for or against it "However," he said, "although I am as happy as only the father of a family can be, and the loss of my beloved wife would be a misfortune that I could hardly bear, yet I believe that if I were

now unmarried, and had already had the experience with the cares of daily life that I now possess, I would certainly marry only if an unconquerable passion compelled me to do so " At that time this opinion influenced me to abandon forever all thought of marriage, and I later became firmly associated with this idea Now I became undecided, I was not yet able to decide whether to forego this step In this state of indecision I asked for advice from Count Trolle-Wachtmeister, an intimate friend and an experienced man of the world "I presume," he answered, "that one can have a happy life without being married, but he who has not had the experience of a friendly home beside a beloved wife remains a stranger to the most beautiful aspect of life With a judicious choice it is not yet too late to have this experience In order to really enjoy oneself one must have a *chez soi* and not have to seek it outside one's dwelling " This made up my mind, and several days later I approached President Pappius, my true friend of many years standing, for the hand of his eldest daughter Despite the great difference in our ages my request was granted with friendship and mutual good-will, on the part of both the parents and the daughter On the occasion of a visit to Count Trolle-Wachtmeister, I took the opportunity to thank him personally for his well-considered, friendly advice that laid the foundation for my present well-being and happiness, which has remained unchanged

1762 — 1836

CHRISTOPH WILHELM HUFELAND

I REALIZED, however, that it was now time to think of marriage, and, aside from the longing of my heart for another heart, there were two reasons that urged me to carry out this intention The one was the unpleasant and often embarrassing position of the practicing physician who is unmarried, the other was the rather unpleasant and critical situations in which a young man, who is marriageable and well-liked, finds himself in relation to young ladies and their families, especially if he is concerned not to insult anyone nor to become too intimate My extreme conscientiousness always made me feel that it was criminal to excite hopes in a female heart that one did not wish to fulfill

My first choice was not granted, although everything seemed favorable A friend from afar stepped between us, a painful struggle developed, and I sacrificed my love to friendship — There then appeared in Weimar from the distant mountains a young, innocent, jolly, extremely lovable girl, whom I saw almost daily, as she lived in the house of Bergrat Voigt, and with whom I became acquainted She won my heart I thanked God for having led to me a pure unspoiled heart, in contrast to the many that were warped She was only 16 years old, however, and I planned to put off our union for at least a year, so that she could be completely educated in a good house But her

father, a quick, vivacious man, was so full of joy at his daughter's fortunate union that he had had the marriage banns published as soon as he received the first news. He came personally to Weimar and urged that the marriage take place, which happened in November, 1787.

American settlement was dominated by the rising middle-class interests of western Europe, so that the background of our institutions is distinctly middle class. Originally, the pattern of American marriage was that of the Old World, and when the nineteenth century dawned upon the young United States, this pattern was still in existence. But while traditional psychological attitudes tended to persist, they declined in force, as the economic basis for their maintenance was eroded.

In the course of the nineteenth century, the impact of the industrial revolution and the existence of the frontier led to a democratization of family life. The pictures of American courtship, marriage and family life etched by Nathan Smith, James Jackson, Marion Sims, Samuel C. Busey, and Edward L. Trudeau reveal that more and more marriage changed from an alliance of families into a union of persons who were accorded considerable freedom of choice.

Similar changes were taking place in Great Britain and on the Continent, but at a much slower rate. For one thing the sharp separation of social classes in Europe tended to maintain the traditional forms of family life. The doctor as a member of the middle class reflects this pattern, e.g., Heubner, Naunyn. At the same time that these changes in family organization were occurring, the higher education, including professional training, of women became a reality, and served to re-enforce the claims of married women to greater freedom. This culminating development is interestingly revealed by Rosalie Slaughter Morton and Havelock Ellis.

Of a different order is the interest which attaches to Hans Carossa's account of his courtship and marriage. One of his patients, a girl, came to him as a serious case, but acting according to precedent set by another poet—Browning's cure of Elizabeth Barrett—he married the girl in 1906, and went to live in the country.

1762 — 1829

NATHAN SMITH

Sally

Cornish, N.H., January 22, 1794

You will excuse the precipitancy with which I proceed in my endeavors to accomplish my connection with you. I expected last evening to have set off for Hanover this morning, and I could not endure the least uncertainty till I returned, therefore I discovered my wishes respecting you to your Sire and Marm last evening, and they have generously given me leave to marry with you.

I hope I shall never meet with your disapprobation. Transported with Joy and Expectation I am

Your sincere Lover

NATHAN SMITH

My dear Sally

I am quite homesick tho' very well on all other accounts You cannot, and I hope you never will by similar experience, be sensible of the anxiety I have suffered since I left home and family Tho' I am every day surrounded with new and interesting scenes and am treated with great kindness and attention by the people here, yet my thoughts continually turn on you and our dear little son, whose name I cannot write without shedding tears on it I imagine a thousand evils ready to befall him I see him every night in my dreams and often wake myself by attempting to grasp him, but he always eludes my fond embrace and leaves me to mourn his absence Do my dear, if he be still living, and I dare not think otherwise, do, I say, watch over him with maternal care, kiss him for me a thousand times each day and tell him that his papa is coming soon

In my letter which I wrote you while in Glasgow I mentioned that I might not be at home till June, but I think now that I shall come sooner I am now in Edinburgh, shall stay here but a few days, shall then go to London where I shall make but a short stop and then sail immediately to Boston I have had no material misfortune since I came here, have become acquainted with the Medical Professors here, and am attending their lectures I have a prospect of accomplishing my purpose to my mind I have bought several books for your amusement, some of them written in the Scotch Dialect with an explanation which will give you a very just idea of the customs and manners of the Scotch people Present my best Respects to your Hónored parents, give my fondest love to your brother and sisters and remember me with fond affection to all our relatives and friends Present my compliments to my pupils and inform them that I shall, God willing, be with them again in May or sooner Remember me in particular to my brother and to every one with you in my home I am, my dear Sally, yours with the fondest love and conjugal affection till Death, which God grant may be at a late day Adieu, my dear, for a little

NATHAN SMITH

1777 — 1867

JAMES JACKSON

HOWEVER small my income might seem, yet I was emboldened by my friends, old and young, to be married at the end of my first year I had begun this year with a debt above \$3000, and had not any source of revenue except my business My father could not afford to give me anything—he was one of my creditors However, he said he would make me loans from time to time if I was prudent Accordingly, on my birthday I was married to Elizabeth Cabot, to whom I had been engaged rather more than four years At the time of that engagement and long after, I talked of being made the happy man in fourteen years instead of four years, but this was not proof of success

The great question in my mind was, should I be able to maintain a family, or should I leave them to the charity of friends My dear mother-in-law was less able to help than my father was I used to say that the town must maintain me out of the Almshouse or in it,—for that I was determined to have a living

I was very bold in my steps I got a house as near State Street as I could find (Congress Street), so that I might be seen, and I remember that on the first snowstorm we had, I dug out the snow from my yard, a work to which I was not equal, for it wearied me sadly, but it said, 'You see I shall not be ashamed to give my bones to my work' My business increased greatly in my second year I also had my wife's youngest brother, Robert, a most true and kind-hearted brother, as a boarder, at \$3 or \$3 50 a week My wife's uncle, Mr Samuel Cabot, my friend, lived in Milton, not rich, but with a large family, and he regarded it as his privilege to live with us as much as he pleased, mostly dining on very ordinary food He added to our income on this account

My fees for this year, on the books, but good, amounted, I think, to \$1800 or rather more I think my whole expenses were about \$1350 From this sum I considered half my house rent (\$250) fairly belonged to office rent, so that I have always regarded my proper home expense as \$1100, and I have never known any man going among the Boston gentry who spent as little in his first year

My dear wife had much sickness in this year Her first child (Edward) was born in August 1802—very small, but healthy for six weeks We were indeed bound up in him—but he was soon taken from us and our hearts were almost broken, so it seemed to me I had such a pang, that I hardly knew how to draw my breath when he gave his last His sickness began with a convulsion when he had seemed perfectly well, we were overpowered He lived I think only four days without any evidence as to his disease

We soon recovered our calmness and became resigned, but I have never ceased to remember the first great grief I felt It had been my delight to have this little darling in my hands, and already it had learned to return my caress, and to utter those sounds which show in the infant a recognition of those who foster and love him I felt, in truth, as if he recognized me and returned the love I displayed to him For sixteen happy years after this his dear mother was with me and had much enjoyment of life, and for her dear children she had all the love that the most true and tender heart could hold, but I may almost say that there was a tenderness left in that large and true and warm heart of hers which was never absent from her while on earth

These lines are written only for my children and those grandchildren old enough to remember me now when my old age has not entirely extinguished me My recollections are of October, 1802 I am writing in August, 1865

1814 — 1899

JAMES PAGET

IN MAY 1844, I married, and began to enjoy that happiness of domestic life which has already lasted without a break, without a cloud for 39 years. From this time, the 'being alone' was the being alone with one who never failed in love, in wise counsel, in prudence and in gentle care of me. With her it was easy to work and be undisturbed by anything going-on around me, a habit which I can advise every one to learn. Her admirable music and her singing, with a matchless gentle voice and a pure cultivated style, were a refreshing accompaniment to my evening reading and writing, and when these were over, she wrote for me, copying for the press my roughly written manuscripts, sitting with me till midnight or far into the morning, all alone, or, after a time, with the baby brought down in its cradle and watched and fed.

I can recommend the plan to all young married people. It is an intensely happy one and may teach them to be able to work in the midst of what are commonly called interruptions. I owe to it that I have never once needed to leave my family or any tolerably quiet party of friends in order to work alone or undisturbed, whether for writing, reading, or any other similar work, no kind of good music or talking has ever interrupted me. I have thoroughly enjoyed them even while at work.

1821 — 1902

RUDOLF VIRCHOW

NOW as regards Rose, it took a long time before we drew close to one another and even at the beginning of this year it would not have cost me any very great effort to tear myself away from her. Rose is very quiet when she does not have to speak, and so she chose rather to listen to my conversations with her mother, with her parents, than to participate in them. But while listening she grew so familiar with my thoughts, in a sense she was thus educated by me, so that I do not know anyone who could understand me better than she. And I, I became fond of her, I knew not how or when, but one fine day I became aware that unexpectedly she had taken possession of my heart. This happened at a very sad time. On the same day, the last day of March, when my little Rose was confirmed I received the official notification of my dismissal.

At that moment I considered it more honorable to hide my feelings for Rose. Thus I remained reserved, even after my appointment [to Wurzburg] had come, and yet I was unable to leave Berlin. And when I finally

saw, how from day to day Rose was less able to hide her sadness, when I saw that she was suffering, and obviously on my account, I could not longer restrain myself. On Monday, I had come to say goodbye, but the afternoon already found us in each other's arms.

Thus it happened I could relate a great many details . . .

But so much for today. Later I will write to mother, probably through Rose.

1813 — 1883

J. MARION SIMS

Paris, October 18, 1861 (Friday)

THIS 18th of October, 1861, has not by any means been the happiest day of my life, but, with perhaps three exceptions, the proudest. The first exception was the day, the 23d day of July, 1833, on which you gave me the rosebud through the garden fence. We were then young and alone, there were none to approve or condemn. A few seemingly long years rolled rapidly over and at last brought the second era, the happy day, the 21st of December, 1836 on which you became my wife. Family and friends were there to yield assent. Many perfectly happy years passed rapidly, and together we climbed up the hill of life until almost at the top, came the first anniversary of the Woman's Hospital, the 9th of February, 1856. You were not there, but New York was, and from that day your husband's American reputation was fixed, and your hopes were fulfilled, and your ambition gratified.

Today Velpeau, Nélaton, Civiale, Ricord, Chassaignac, Follin, Huguier, Debout, Baron Larrey, Sir Joseph Olliffe, Campbell, Johnstone, and many others honored me with their presence at the Hôtel Voltaire, Quai Voltaire, No. 19. I had one of the most difficult operations I ever performed. The patient was a very bad one, short, fat, and nervous. Chloroform was administered by Dr. Johnstone. It acted very badly, the patient became slightly hysterical, and uncontrollable, and chloroform was for a while suspended. Some thought it dangerous to continue it, to stop it was to stop the operation. Velpeau strongly advised against continuing to give it, but Johnstone proceeded, and gave enough to produce quiet, and the operation was performed. It took about forty minutes. It was one of the most difficult that could be. Everybody was delighted except me. I never had so many obstacles present at one time in any case. I have had as bad patients, but then the operation was not so difficult, and I have had a few as difficult, but they were in docile patients, but here everything was wrong except my presence of mind and confidence. But all obstacles were so quietly and so thoroughly overcome that everybody congratulated me on encountering them. The triumph is complete, and you may feel secure as to the full and perfect recognition of my claims throughout all Europe. Not only now, but often while I sit in the midst

of the decorated *savants* of this great city, my thoughts turn instinctively to the wife of my bosom, who, as the mother of my children, is a thousand times dearer to me than she was in the spring-time of life, as the playmate of my childhood and the idol of my youth. To your gentle care and loving kindness and wise counsel I owe all that I am, and I feel that, with all my successes, all my triumphs, with the prospect of lasting fame, I am far, very far from being worthy of you, for when I have told you thousands of times that you were too good for me I have been in earnest. But while I feel a secret, unexpressed gratification at the extraordinary result of my visit here, which would not have been made but for your persistent entreaties, let us not forget the great Author of it all. I have done nothing, but have been led along, I know not how, and have followed blindly, confidingly, and patiently. Nothing has been done just as I would have had it, but all has turned out, or is turning out, better than I could have devised.

1822 — 1875

JAMES HINTON

IN MY studentship I obtained every prize for which I tried, though that wasn't many. And there is another prize which, with God's blessing, I will yet obtain, and that is yourself. I have been so long accustomed to look upon it as utterly impossible that you could ever be mine, that it seems difficult for me even now to believe it true.

Do you know, dearest, I have long been of the opinion that the love with which lovers love ought not to be regarded as anything peculiar and extraordinary, but only as the nearest approach which we can make on earth to the true nature of that love with which we ought to comprehend all our fellow-creatures. In pity to our weakness, and in order that we might be able to comprehend something of what love truly is, God has made us capable of loving one person, that we might be able to form some faint idea of what that state must be where love is perfect and complete. For does not the true secret of loving, of yielding up ourselves to be another's, lie partly, at least, in this, that thus we can understand and appreciate most fully that other's character, the union of soul in love removes as it were a veil from our eyes. When in love, a partition is broken down, and we begin to understand another. *Humanity* is then revealed to us—perhaps not as it is, alas! for its glory casts all its faults into the shade—but in some faint resemblance to what it was, what it might be, and what by God's grace it shall be.

My heart burns with indignation when I hear people talk of the folly, and blindness, and exaggeration of love. In truth, all, except those who are in love, are blind and ignorant. It is a telescope given us (just for once) by God, to

reveal to us wonders and glories hidden indeed from the unaided eye, but none the less real and glorious for that

March 1852

As for marrying at Midsummer, though the thought is only too delightful, I must confess I don't see how we are to live. Not that I think a great deal of money is necessary, £250 a year would do well, and I believe we could manage to get furniture enough. I have no idea *myself* of beginning married life, necessarily, in style. I don't at all hold with the doctrine that children ought to begin where their parents leave off. I think it is quite reasonable for them to begin where their parents *began*. This, however, is only my own private notion, I don't at all want to force it upon you. But, then, I don't see my way clear to £250 a year, although I feel that I ought to do so. And, in short, I am distressed, irritated and disgusted, and don't see clearly what to do. But I will find out soon, and give myself energetically to work, and I shan't remain in this unhappy state long.

Have you really quite decided against Canada? I am not sorry for it. I have decided so too, unless the matter should assume a most irresistibly attractive aspect, in which case, if I alter my mind, I will be bound I can persuade you. And, after all, a life spent in London even without more than a very little money, if it be actively employed in doing good, is as beautiful as a life anywhere can be.

1828 — 1909

SAMUEL CLAGETT BUSEY

WITH such exceptions my life at Rockville was uneventful, with a weekly visit home, which for the most part was passed in idle recreation with the family, and a visit to Springfield, the homestead of the Posey family, to keep up and foster my acquaintance with the girl to whom I have before referred, until she, like myself, was sent away to boarding school, the circumstance which, perhaps, had more influence than any incident of my life in determining my course of conduct in after-life. I lived then to win her love, as I lived long afterward to make her happy and comfortable. There were pretty girls at Rockville, but I was callous to their bewitching charms, "for never was one more blind to beauty that hangs upon the cheeks."

My sly visits on Saturdays to Springfield were not always free from perturbing incidents that sharpened the ragged edges of disappointment and pierced my hopes with disconsolate misgivings. Miss Catharine had younger sisters, especially one just at the age when little sisters will hang around, catch bits of conversation, and take pleasure in telling tales out of school. I was not afraid of her gossipy and tattling tongue, for I was too shy and timid to tell the story of my love, and kept as far away from the real object of my visits as

a bashful youth tries, but usually fails, to do. The fascinations of a pretty girl, with winsome ways and not altogether free from coquettish pranks, are a little too much for the country youth whose bashfulness is the measure of his infatuation. On such occasions the little sister, with coy reluctance, would whisper, in sentences broken by pert side glances and smothered exaltation, into my wistful ears stories of the frequent visits of rival suitors, whose opportunities were so much more favorable than mine, that sank so deep into my ear as sometimes to hasten the good-bye and a petulant departure, to return along the lonely road to Stony Lonesome, and there to drain the cup of pout and heavy-heartedness in mock merriment and improvised good cheer. But, with fresh courage, the succeeding Saturday found me on the road to repeat my visit, and the greeting of the little sister, perhaps at the entrance gate, where she was wont to watch, with the welcome salutation that sister Kitty was waiting my arrival, was sufficiently significant to inspire even such a diffident lover with hope, and encourage him to accept the innocent pranks of a girl's affection with less trepidation.

I do not know how much the chatty sister may have teased my rivals with newsy tales of myself, for they were older than I, and looked upon me as a lovesick youth whose infatuation would attenuate with delay, but she was my good friend, and seemed to play the part of an *avaunt-courier*, bearing peace-offerings, with bits of information that served, at least, to lighten the burden of distrust and hold out a ray of hope. Like one drowning, I caught at every straw, and drank in deeply the friendly prattle. I was even more ready to accept trivial signs of favor than quick to pout with the dumps. And so the boyhood courtship ran its course of miseries and pleasures through several weary years, with gradually increasing confidence, before I could screw my courage up to the sticking-point "to tell the story of my timid homage," and bear away "the chief of all love's joys"—"the breath of a maiden's yes."

This event came to pass during the early autumn of 1845, after I had commenced the study of medicine in the office of Doctor Hazekiah Magruder, in Georgetown, and the young lady had finished her course of studies at the seminary in the same city, kept by Miss English, and each of us was freed from the discipline of boarding-schools, which had limited our interviews to Saturdays. I was then at liberty to make my visits at my pleasure and her convenience. Previously I had chosen Saturday because both of us were at our country homes on that day, and I was not so likely to be embarrassed by the intrusion of other visitors. During the succeeding six or eight months our affianced lives ran their course in smoothness until broken by my departure for Philadelphia to enter the private office of Prof. George B. Wood, and to matriculate in the University of Pennsylvania, from which I graduated on April 8, 1848. During my residence in Philadelphia I made but one visit home, during which I was a daily visitor at Springfield.

In those days engaged people did not rush into the public press to announce it. The engagement was held as an inviolable secret, not to be communicated

outside of the immediate families of the affianced couple until the wedding-day was fixed. Of course, in a country neighborhood, gossipy innuendo and suggestion kept up a continuous discussion of an affair which everybody believed, but no one knew to be true. Immediately after graduation in medicine I settled in this city, and was married on the first day of May, 1849.

1843 — 1926

OTTO HEUBNER

ON THE way home from Karlsbad to Dresden I met my former foster father, Uncle Julius from Mylau, who was likewise traveling to Dresden. As we alighted together, we were met by Uncle's brother-in-law, the merchant Julius Haussner, who had recently moved from Sprottau to Dresden, and by his daughter, a very charming young lady, as I immediately noticed. After a brief, friendly greeting, I went to my parents in the Waldpark. The next forenoon I accompanied Uncle Julius in the city, and he invited me to come with him to the home of Haussner, his brother-in-law. We were received in a friendly manner, served with breakfast, and then the blond miss visited the art exhibition with us. In the afternoon the Haussner family, Uncle and I went for a ride to Blasewitz on a small screw-steamer—a new enterprise in which father Haussner participated. At Blasewitz, there was a lively reunion of the Heubner and Haussner families in the Schiller garden, where Rose (Dietsch) and I, accompanied by Konrad, sang all sorts of beautiful duets and had a fine time. The following Sunday, August 29, the Haussners were invited to our house for dinner, where I had again had an opportunity at the table and in the garden while she trundled the hoop, to observe—and to appraise—my new cousin. There followed several days of quiet consideration and self-examination. Several years earlier, in Mylau, I had already been interested in the picture of the dear girl, and had been told much of her good education and ability in management, as well as of the fact that in Sprottau the officers had practically swarmed about her. As she, with her charming youthful bloom, had made a very definite impression on me—she was twenty years old—I asked myself if I would have the courage, after such a short acquaintance, to chance a possible evasive answer to a proposal (but if so for the last time in my life).

It had been agreed that the families would meet on Bruhl's terrace on Sedan Day, September 2, a Thursday, to celebrate the fifth anniversary of Sedan. In the morning my father had given the address of the day on the Sport Meadow. We found a pleasant spot for conversation. Towards nine o'clock in the evening the fountain near the theater was to be illuminated, and we young people wandered off to enjoy the spectacle. I offered Fraulein Haussner my arm, it was necessary in order to be able to move through the

crowd On the way back to our parents I stayed somewhat behind the other young people—the Haussner boys swarmed about us—and dared the decisive question It was answered with a definite "Yes" Martha, now mine, had already likewise heard a good deal about me, so that she did not entrust herself blindly to me after so few days of personal contact This Sedan Day brought happiness into my life That night a joyous bridegroom went to bed, and the following day he asked the parents for the hand of their daughter I was able to offer her an existence, which while modest, was adequate, and readily obtained the consent of her parents, especially of her father Her mother was more reserved

Now began a wonderful fall and winter The days that followed were still beautiful and warm, and unless I was prevented by a serious case in my practice, which was not very large, there was rarely a Sunday when I did not hasten with the earliest train to Dresden to the arms of my beloved Often we spent the day in the Waldpark, where the beautiful bower once again hospitably welcomed a love-pair My parents were also happy about my choice During several months of severe winter we enjoyed ourselves by taking walks over snow and ice, and by skating, and when the lark began to sing in February, we pilgrimaged over the green field to the Waldpark

The months to our wedding, on June 1, 1876, passed rapidly I found a suitable apartment in the Emilienstrasse, which I rented from a Herr Schaf, who prepared it very nicely for us according to my instructions It was a very cozy nest for a young couple

For our honeymoon trip we were able to take advantage of the Whitsun holidays Our itinerary took us to Heidelberg, where we visited Hermann's* grave in the beautiful blooming cemetery, and then to Baden-Baden in the Black Forest We traveled like students, sending our baggage by rail from one spot to the next, while we wandered happily through the spring days without any definite plan When we arrived at a hotel in the evening without any baggage (and somewhat disheveled), we were first met by astonished glances until we had the large trunks fetched from the railway station We went as far as Lake Constance, where from the beautiful island hotel in Konstanz I was able to show Martha the distant Alps

Now began our life at home It was quite modest, but happy in the knowledge of our mutual love At the end of the very first month tears were shed when the young wife found her housekeeping money was insufficient But that did not trouble us In order to increase my income, I accepted the position of a student's doctor (for a few hundred marks) Thus, during the summer I was already able to present my wife with a "semi-formal" dress My means were not yet sufficient for a formal gown She needed it for the few social affairs that we attended In view of our limited finances, we made only few visits

* Heubner's brother who had died in the Franco-Prussian War

1839 — 1925

BERNHARD NAUNYN

I HAVE already frequently called to mind my Uncle Karl and his daughter Anna. It was the uncle from Sommerau, on whose beautiful estate near Tilsit I had always stayed so gladly and where I had spent many a happy summer vacation as a school boy, student and young doctor. Now, to the sorrow of all of us, he had sold his fine estate and lived in Königsberg with his family. Anna met me half-way with her former affectionateness, and I had always liked her. I was there a good deal, and we quickly became good friends again. She had become a sensible, vivacious, warm-hearted girl. Of medium height, very well built, and just sturdy enough not to appear "delicate," she was charming and graceful in her carriage and her walk. It would have gone more rapidly with us, had not I, as a doctor, labored under the well-founded prejudice against marriages between relatives. Consequently, I consciously remained reserved. It took a long time until I saw the light, abandoned my scientific standpoint, and seized my happiness as it stood before me.

I was quite uncertain how Anna felt towards me, but it was obvious that only by asking her would I be able to obtain certainty on this point—so I let matters take their course, and the affair developed spontaneously.

The first act did not lack the happy atmosphere which was appropriate. It was spring. At first everything still remained as it had been. But when the summer semester came and vacation plans had to be made, I was greatly surprised to find that I lacked any inclination for the usual vacation trip, and I wrote to my mother that this time I wanted to spend the vacation in East Prussia. My good mother immediately recognized the true cause, that something was developing between Anna and me, and she did not look upon it favorably. She too was opposed to marriages between close relatives, and decided to separate us by inviting Anna to spend the summer vacation with her at Blankenburg in Thuringia. But when she wrote to me about this, I changed my plans. I decided to surprise my mother and set out for Blankenburg. Here I found Anna already present and on the most friendly terms with my mother and sister. These were beautiful weeks that we spent together there.

Because of her illness my mother had difficulty in getting around, and was restricted to the house and the garden. As a result my sister, her inseparable companion and attendant, was also kept close to the house. Anna and I therefore joined forces, and wandered through the woods and over the hills of the Thuringian forest all day long, but only as good comrades, not as lovers! To be sure, the ladies of our acquaintance looked askance at the strangely inseparable cousins, but that mattered little to us. The desire to avoid well-trodden paths which we shared came into its own at this time, and as we soon

knew the woods thoroughly we made friends with its occupants, the deer and the wild hogs

The end of the beautiful period of companionship was a trip that we three, my sister, Anna and I, took to Weimar, Eisenach, the Wartburg and so on. Anna was happy because she had never seen any of the German mountains and the Wartburg with its ancient myths had bewitched her completely. It was mid-September, the beech leaves began to take on an autumnal color, and the view of the castle in the golden light of the evening sun on the mountain was extraordinarily beautiful.

But our affair still remained undecided. And why didn't I decide to make the proposal which was now indicated? Perhaps cowardice? Perhaps also because I felt sorry for Anna, as I had a very low opinion of my suitability as a husband. Economic considerations were no longer involved. My situation had improved to such an extent that in the last year my gross income was already 15,000 marks, a sum which seemed very large to me then, and was also very adequate. So—I let the fall pass, at the same time maintaining my affectionate relations with Anna. Finally, at Christmas, jealousy, which so often forces a decision, entered the picture. Parenthetically, I want to say that the jealousy was completely groundless.

On January 1, I made up my mind. Previously, when speaking of my "future wife," I had had the cheek to say that I would only marry a woman who when I proposed to her would fall on my neck and embrace me. But it did not happen here, at least not immediately. I could be satisfied, however! The love for me which she admitted when she accepted my proposal was true and sure. She was always the best daughter and sister, and has remained so up to the present, but from that day on she and her entire life belonged to me. From that day to the present we were as one. Never has one of us taken any serious action alone since then. We have gone through life hand in hand, the innermost recesses of our hearts have been open to each other, and each aware of the others desires and wishes. The forbearance and kindness which I received from Anna were always the warm reflection of her love, a love which was unshakable and independent of everyone and everything. At that time she was a young naive girl, who had grown up like a flower of the field to the joy of herself and all around her. Today she is a clever woman, who has experienced much, and it is not only her warm-hearted kindness which attracts people. For me she remains unalterably my sunshine.

On January 2 we went to Berlin to my mother and sister. Since the stay at Blankenburg, both of them had become very fond of Anna and were happy when I brought her to them. We all seemed so obviously to belong together, as if it had always been so.

There followed a brief engagement, and during the Easter vacation I brought Anna home as my wife. After a short stay in Berlin, we went to Italy as far as Rome. A new world opened up for both of us. Nevertheless, I will tell about our honeymoon later. However, I would do violence to my feel-

ings, did I not wish to speak at length of my wife at this point I am unable to transmit to anyone the feeling of gratitude to her which I have experienced throughout the long years, yet I would not be able to die in peace, if I did not relate here how I saw and understood her. At any rate, I would be unable to continue with this writing. Sometimes I think that these "Reminiscences" have been written only so that I would be able to speak about her here.

I had long known and was sure that Anna was healthy and gifted, both intellectually and physically. The education received in the parental house had laid the foundation for an intellectual life and intellectual interests, but I was astonished by all that she offered me. Anna surpassed me in many things, in some of which I had no feeling of deficiency. This young child who had seen almost nothing of the world, whose mind and opinions had been able to develop almost exclusively on the basis of that which was offered by her parental house and the circle of friends with which she associated, showed the sincerest receptivity for everything beautiful, but even more than that, an unsurpassable keenness of comprehension which overlooked all that was unimportant, and, combined with the most naive, extreme modesty and reserve, an integrity and certainty of judgment, which despite all subjectivity and individuality would do honor to a more experienced person. In everything she brought to bear the influence of her particular strength, that is, her veracity and the seriousness with which she served it. Insincerity, dishonesty, hypocrisy, everything in which there was even a grain of untruth—all these it was impossible for her to endure. She shunned any contact with untruth as well as with ugliness, and filthiness. And this was true everywhere and under all circumstances. Even towards me she was firm on this point. But our relationship was never threatened by this attitude, for we both held steadfastly to a liberal view of life and the categorical imperative. While she repulsed or refused to have anything to do with the bad ones among those who cannot be happy with truth, yet it is astonishing how many very different kinds of people her sincere nature was able to tolerate. Her genuine femininity was the bond which linked them all, her selflessness, warm-heartedness and friendliness. In her old age she has retained an almost clinging charm, which even at present, when it is appropriate, can give her an appearance of girlishness.

The standards by which she judges people who wish to be respected are not slight, but the highest are those by which she judges herself. As far as others are concerned she has refused forbearance and clemency only where it was necessary. Thus she is no friend of dilletantism. She has hardly cultivated the talents that she possesses. Perhaps this has been beneficial for the development of her total personality. At any rate, it made it easier for her to bring her interests more and more into paths that accompanied mine and met them every where.

I have stood in wonder before that rare combination of devoted, selfless love and complete, unshakable firmness in her own personality which char-

acterizes Anna, and even today my gratitude to her is not free of shy wonder. An entire life, of whose individual value she was aware, dedicated to the man she loved, a man who because of his temperament presented so many weaknesses, which were so deeply rooted in his nature that their removal would have been very difficult to accomplish without damage. Anna could not overlook them, yet I would not be just to her, were I to say that she "endured" them. They belonged to the entire man and it was this man that she loved under all circumstances, even such that were perhaps painful, although I hope that such pain was not too great. We influenced each other in many things, in one thing I followed her completely. Anna's home, East Prussia, became mine. There she grew up, there lies the scene of the joys which our young marriage brought to us, in that section I found my happiness, and for these reasons I like and value it.

1848 — 1915

EDWARD L. TRUDEAU

ALTHOUGH I was seventeen I had known little or nothing of young girls in France. Whenever I met any of them or spoke to them it was always in the presence of some older person, but young men and women were never given any opportunity for free interchange of ideas and impressions or allowed to enjoy harmless pastimes together. To find myself all at once thrown intimately and unrestrictedly with my girl cousins and their girl friends, in winter to talk and ride and dance and skate with them, and in summer to drive and sail and row and swim and dance again with them, was a new revelation to me, and I think I made the most of my opportunities.

Those were joyous play-days indeed, especially in the glorious summer time spent at Nyack, when I had a horse and wagon and a sail-boat, but no lessons, and the absence of all the young men during the daytime at their business in New York gave me an unrestricted field with the girls and brought my wagon and sail-boat into constant requisition. I had many love affairs, and I am afraid I was rarely off with the old love before I was on with the new. But they were not very serious love affairs, though they often seemed so to me at that time.

It was on a trip to Nyack that I met my wife. My cousin, Minnie Aspinwall, had frequently described her dearest friend, Lottie Beare, to me in such glowing terms that I was impatient to meet her. My cousin Minnie and I had arranged that we should go up to Nyack together that day. When I called for her on Eighteenth Street I found her talking to a tall, very slender young woman, dressed in black, whom she at once introduced to me as Miss Lottie Beare.

Minnie informed me Miss Beare was to accompany us on the boat to Nyack to spend a few days with her at their country house, and we all started

at once On the boat I talked to both the girls, and though Miss Beare was pleasant enough I thought her cold and dignified When we reached Nyack we decided to walk to the Aspinwall house, which was on a high hill I seized Miss Beare's travelling bag with alacrity and we started It was a hot afternoon and the hill was long and steep, the bag large and heavy, and Miss Beare did not seem to me very gracious When we reached the house she at once went to her room, and my cousin rushed back to me and said,

"Well, what do you think of Lottie Beare?" and I answered

"I don't know much about Miss Beare, but I can say positively that she has an enormously heavy travelling bag"

Nevertheless it was the tall, slender girl in black with the heavy travelling bag, who soon inspired me with a love which made me in time give up all the wild mode of life into which I was fast slipping in New York and work for three years to obtain a medical degree, and for a lifetime to try to be worthy of her I am often asked if I would be willing to live my life over again, and as I look back on most of it I can say very positively, "I have my doubts", but that part which has been lived in contact with the "tall and slender girl with the heavy travelling bag" I would gladly live over again indefinitely Miss Beare, however, did not for a long time look on my advances with favor, and I came perilously near going to the dogs in New York in the meantime

1876—

ROSALIE SLAUGHTER MORTON

ONE day after office hours were over and the "walk in" sign had been removed from the door, the bell rang As the maid was out, I opened it A tall, dark-haired handsome man of about thirty greeted me cordially, not remembering having met him, I suggested that he had made a mistake With dashing impudence and a disarming smile, he insisted such was not the case, that on the contrary we had been acquainted for five years Triumphantly he produced a note which I had written to him expressing regret in missing a call, which he had made on my sister and me the day after I had met him

This letter brought back to my mind a race near the University of Virginia which I had attended with a crowd of young people This engaging caller told me that he had sat back of me in the four-seated surrey, I had worn a light veil over my rebellious and easily wind-tossed hair He had whispered to the lady he was accompanying that he was going to marry me She warned, "Many youths have had that idea but Rosalie is not interested, her heart is set on becoming a doctor She has been studying medicine for three years, and neither heaven nor earth will change her purpose" This admonition evidently had not disturbed the man of quick decisions, for after five years here he was with his mind tenaciously clinging to the same determination "I am going to

make an impression upon you this time, which you will not forget," he announced

The siege began. A variety of books with marked passages and gay notes filled my mail-box and rapidly deepened our acquaintance. These he suggested would be the nucleus of our future library. He sent huge boxes of the loveliest flowers, which I knew he could not afford, when I remonstrated that they were a great extravagance, he smilingly retorted that he liked the prospect of marrying a thrifty girl.

Until now I had not given a serious thought to marriage. Of course I had, as all girls have, a number of beaux, but I had managed to keep them on the safe side of friendliness. Flirtations did not appeal to me. My idea of an engagement was that it could only be entered into with the absolute intention of being speedily followed by a marriage which should last until death, even now I cannot understand how a girl with any grain of self-respect can allow familiarities which must cheapen her in her own eyes. Some people are more sensitive in their electric reaction to personal contact than others. In this I am supersensitive. Electric energy is easily exhausted or stimulated according to the mental impetus which repels or attracts. I had liked boys because they were good pals. I was fond of sports, had a lively imagination, was fairly quick at repartee and objective in my interests. I relished the comradeship of young men mainly because of their possibilities for achievements. A lad without ambition would have bored me intolerably, my friends were going to be great engineers, inventors, lawyers, judges, governors. When I talked to them about what they were going to accomplish, their pleasure in my expectations found a ready conversational by-play or more interest than adolescent love-making. Gradually there developed the idea of preparing myself for similar achievement. From the moment I entered college, my mind had been so preoccupied with the acquisition of knowledge that I had seldom given thought to marriage. If destiny had not placed a very determined young man in a surrey, if I had not chanced to sit where my profile caught his fancy, romance would not have come knocking at the door that afternoon.

Several of the ablest medical women in Washington were happily married. Dr. Sophie Nordoff-Jung had an international reputation, as did her husband. Dr. Anita Newcomb McGee, Dr. Isabelle Haslup Lamb and many others had successfully solved the marriage problem, in each case harmonious comradeship was evident. Dr. D. S. Lamb, one of the leading men in the Medical Society, practised with his equally capable wife.

George B. Morton, Jr., had studied medicine for two years and had then preferred law. Already he was a practising attorney in New York. The summer I had met him, he was taking special work at the University of Virginia. His ideas were modern for 1906, he saw no conceivable reason why I should not continue my own work and keep house as well—since, as a matter of fact, I was doing both already. If I decided to marry him, I must, of course, give up the position I had made some progress in establishing and move to New York.

where I knew practically no one. It would mean beginning all over again. I debated, took another look at him and decided that the compensations would be well worth it.

However, I was constitutionally opposed to women being required to say "obey" in the marriage service. We agreed between us that it should be omitted, but the minister thought differently. I explained that the contracts would be between God, my husband, and me. Not content with a civil marriage, I wished to have the sanction of the church, nevertheless, I could not tell a lie, if my husband and I ever differed on a moral issue, he would not be held responsible for my delinquency. If I should steal or kill, I would be sent to jail, if I committed even mild offenses against moral and economic codes, I would have to take the consequences, obedience to my husband would be a shabby, impossible defense. Believing that he had a high, fine character, otherwise I would not have considered marrying him, I would coincide with his wishes and was willing to subordinate my preferences to his as a matter of simple justice since, as my husband, he would be legally liable for my bills, even though we had agreed to share our expenses equally as soon as I began practice in New York. Earnestly I upheld my belief.

The minister was somewhat confused. He saw the ideal of married life only as it had been lived around him. I saw several ideals of marriage and was not afraid to attempt the most difficult. He said he would take it up with the Bishop. Reporting everything to my fiancé, I urged that if he was afraid to marry such a headstrong lass, we should shake hands and feel no embarrassment in returning the wedding-presents our families and friends had sent. We would be good friends but nothing more. He, God bless him, said that he liked the idea of a new adjustment to life, that we were part of a new era, and had to meet a different set of circumstances from those met by our pioneer and intermediate ancestors. We would go valiantly forward with our eyes on our ideal.

I had fought for independence in going to college, but I wanted to be married in Lynchburg according to the traditions of my family. As the carriage stopped before St. Paul's Episcopal Church, on the grounds formerly occupied by the home of my childhood, I thought of my mother, wishing I might have her blessing. My brother opened the carriage door. There stood a determined minister.

"I have heard from the Bishop. You must say 'obey'."

I would not allow myself to be disturbed, I had told him how I felt. With a tightened feeling in my heart and misty eyes, I walked into the vestibule of the church, hoping no one would speak to me. The few minutes before the strains of the wedding-march came through the door, I thought of the years I had been away from home, the tenderness of the old friends who had decorated the church, who were now gathered for the wedding, the relatives who had come a distance, and my faith in the man I was to meet at the altar. The

beauty of the flowers, the candles aglow, the sanctity of the altar I was approaching, combined to give me a very solemn, humble feeling

When the minister instructed us to repeat after him the fateful words, I said with all the fervor of my soul, "I will love, honor, cherish—" there was a perceptible pause—"but not obey" A flicker went across my husband's face The minister looked nonplussed He could not dispatch me from the high altar After another pause he went on with the ceremony I was not sure whether I had been married or not, but I decided to act as if I were I snuggled happily against a pounding heart on the way to my brother's home The wedding-reception was in a silver candelabra setting—quite appropriate for a Virginia maiden's adieu to her girlhood environment

1 8 6 5 — 1 9 4 0

WILFRED T GRENFELL

WE MET on board the second day out She was travelling with a Scotch banker of Chicago, and his wife, Mr W R Stirling, whose daughter was her best friend They were returning from a motor tour through Europe and Algeria The Mauretania takes only four and a half days in crossing, and never before did I realize the drawbacks of "hustle," and yet the extreme need of it on my part The degrees of longitude slipped by so quickly that I felt personally aggrieved when one day we made over six hundred miles, and the captain told us in triumph that it was a new record The ship seemed to be paying off some spite against me My mother kept mostly to her cabin Though constantly in to see her, I am afraid, I did not unduly worry her to join me on the deck When just on landing I told her that I had asked a fellow passenger to become my wife, I am sure had the opportunity arisen she would have tumbled down the Mauretania's staircase When she had the joy of meeting the girl, her equanimity was so far upset as to let an unaccustomed tear roll down her cheek That, at least, is one of the tears which I have cost her which brings no regrets For she confesses that it often puzzles her to which of our lives the event has meant most

The constant little activities of my life had so filled every hour of time, and so engrossed my thoughts, that I had never thought to philosophize on the advisability of marriage, nor stopped to compare my life with those of my neighbors There is no virtue in keeping the Ninth Commandment and not envying your neighbour's condition or good when it never enters your head or heart to worry about them, and when you are getting what you care about no halo is due you for not falling victim to envy or jealousy of others I have not been in the habit of praying for special personal providences like fine weather in my section of the earth, or for head wind for the schooners so as

to give me a fair wind for my steamer, except so far as one prays for the recognition of God's good hand in everything

I can honestly protest that nothing in my life ever came more "out of the blue" than my marriage, and beyond that I am increasingly certain each day that it did come out of that blue where God dwells

I knew neither whence she came nor whither she was going. Indeed, I only found out when the proposition was really put that I did not even know her name—for it was down on the passenger list as one of the daughters of the friends with whom she was travelling. Fortunately it never entered my head that it mattered. For I doubt if I should have had the courage to question the chaperon, whose daughter she presumably was. It certainly was a "poser" to be told, "But you don't even know my name." Had I not been a bit of a seaman, and often compelled on the spur of the moment to act first and think afterwards, what the consequences might have been I cannot say. Fortunately, I remembered that it was not the matter at issue, and explained, without admitting the impeachment, that the only question that interested me in the least was what I hoped that it might become. Incidentally, she mentioned that she had only once heard of me. It was the year previous when I had been speaking at Bryn Mawr and she had refused in no measured terms an invitation to attend, as sounding entirely too dull for her predilections. I have wondered whether this was not another "small providence."

Nearly ten years have now rolled away since our marriage. The puzzle to me is how I ever got along before, and these last nine years have been so crowded with the activities and worries of the increasing cares of a growing work, that without the love and inspiration and intellectual help of a true comrade, I could never have stood up under them. Every side of life is developed and broadened by companionship. I admit of no separation of life into "secular" and "religious." Religion, if it means anything, means the life and activities of our divine spirit on earth in relation to our Father in heaven. I am convinced from experience of the supreme value to that of a happy marriage, and that "team work" is God's plan for us on this earth.

1859 — 1939

HAVELOCK ELLIS

OUR talk was much more of the fundamental problems of marriage. Concerning the economic basis of the relations between men and women, we had, I think, already begun to speak as we walked along the beach at Porthmeor. Our opinions on that point were from the first identical. We both alike firmly believed that the social equality of men and women should involve an economic equality in marriage, each partner thus preserving independence. Practically, moreover, in our own case, should the question of marriage arise, we

found that this was the only basis possible, for each had an income of about the same size—in my case earned, in hers unearned—and sufficient only for one person in our own walk of life, so that it would not have been possible for me to support her. We were prepared, in a playful yet serious spirit—in which she took the initiative—to be most exact and thorough in our division of expenses, and she used to declare whether or not with truth, that we divided the cost of the wedding-ring, which we went together to Hatton Garden to buy. That ring she wore to the end, even when we seemed to be separated. To the end also, as throughout, she insisted on her freedom and independence, sometimes indeed exaggerating it, alike in fact and in statement. The principle seems a sound one, and I should hesitate to admit that my faith in it has wavered. Yet I cannot say that in our case it proved a success. In practice it gave greater scope to her than to me, because of her greater practical energy, of her more impetuous impulse and swifter decision. It enabled her to live out her own life in great freedom, and therein I often benefited, but it also led her into many mistakes from which I also, and sometimes chiefly, suffered. Again and again, it would happen that, on her own initiative, with all the ardent precipitancy of her nature, she would take up a new scheme, without waiting even a day to consult me, and I could scarcely refuse, even when she left me free to refuse, to take up my share of all the burden, which sometimes proved grievous, for she was ever sanguine and never able to count all the cost of any undertaking.

The result was that during the whole of our married life we were rarely free from some degree of worry over money, and the fact that we were both honourable and scrupulous in money affairs, and both belonged to families which had always lived within their means, made this still less easy to bear.

At the same time it must not be supposed that the financial difficulties which so often worried us were due to any careless or even, one may say, unbusinesslike habits in Edith's way of carrying out the joint functions she so largely arrogated. She was a good household manager and organiser, by family tradition, as I should say, 'house-proud'—no one could make a room look charming with less expenditure of money or efforts or in a shorter space of time—and she was wonderfully successful in the difficult task of drawing the best out of servants and often of winning their attachment.

There was another essential point we discussed—the legal form and ceremony of marriage. On that point also we were at one, after we had adjusted our slightly different points of view. We neither of us felt any personal need for an ecclesiastical sanction of marriage. That was a standpoint, common to both of us, which we took for granted. I do not even know how or when she had reached it, but I think it may be regarded as implicitly assumed, although not explicitly stated, in the principles of the New Fellowship. It is true that, at the moment when our friendship began to become more intimate than mere friendship, she was for a short time troubled at the possibility of a too

cheap or merely temporary relationship and that (as I find by our correspondence) I had at first said that I thought marriage good neither for her nor for me. I never repeated the remark. We both regarded marriage as sacred and inviolable, but as the primary concern of the two persons who entered on that union, though also (as she at the time specially insisted) a matter that concerned the State. But it is one thing to cherish faith in an abstract social creed, and quite another to propose to carry it into immediate practice. On that point also we were, from the first, at one. I had never proposed to myself a free marriage union as a practical possibility, and I certainly should not have proposed it to her. The alternative could only be between an entirely private intimacy—then a form of sexual union opposed to her feelings and ideas—and a recognized legal union. In any case, we accepted, without dispute on either side, the practical necessity of marriage.

As our resolve to marry thus began to take definite shape, there was another yet more intimate question to discuss—the question of parentage. This also was a question over which I cannot recall that we had the slightest dispute, though considerable discussion, for we were at first much in doubt. At that time the problems of eugenics had hardly come to the front, and I had taken no active interest in them. But (as my book on the criminal shows) I regarded heredity as a matter of serious concern and fully realized the responsibilities of parenthood, while at the same time I had no keen anxiety for parentage, even apart from the fact that I scarcely felt myself in the economic position to become a father. Edith also, at that time, although always sensitive to the beauty of motherhood, seems to have had no overpowering desire for a child. We were, therefore, able to discuss the matter with fair impartiality, as a question of her health and ancestry, since my heredity was as nearly as possible perfect, and my health—with due allowance for an intellectual worker's nervous hyperaesthesia—would pass all ordinary tests. In resolving this difficulty we were both much influenced by the opinion of her Harley Street physician, Doctor Birch. None had ever studied her so thoroughly and so minutely, or understood her so well as this clever doctor. Up to her death she would still take at times, and with benefit, a drug he had prescribed. I believe that she first came into his hands after her breakdown at Sydenham a few years before I met her, and it was then that his very thorough examination took place. 'I study you,' he said, 'as I study the Bible' and he was a religious old man. Although there was evidently no hint of indecorum, there was (before psychoanalytic days) something rather unconventional in such minute study of a patient, and that he realized this I judge by a question he asked her about my attitude to him when she told him of her approaching marriage. She had not gone to consult him about the advisability of marriage, he had told her his opinion on that point before any question of marriage had arisen.

That opinion was that she ought not to marry, but that if she should marry she certainly ought not to have children.

We decided to accept Birch's advice against children, and there was no

protest on Edith's part But, it must be added, she always disliked the idea of any kind of what seemed to her unnatural union, and that dislike soon became stronger and had a significant bearing on our relationship Many years later, when it was too late to reverse the decision against maternity without grave risks, she sometimes regretted it But, much as I have sometimes wished that it had seemed possible to risk parentage, I have not wavered in my belief that the wisest decision was made Even if she were physically apt for maternity, and in most respects she certainly was, her inherited nervous instability would have involved serious risks to herself, and possibly still more to the child to whom it was passed on, perhaps in an exaggerated form, through my contribution of nervous excess Moreover, while she possessed many maternal aptitudes I doubt whether she was adapted to be a good mother unless perchance the discipline of maternity trained the abrupt irregularity of her moods Much as she liked children, she could not endure them for long, and it was a sore trial to her to stay long with friends who had young children, it was only with animals that her patience was inexhaustible So that, much as there always is in life to regret, I am thankful still to feel that, in this matter at all events, what seemed best to do was done

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HANS CAROSSA

THE blessed demons of others' poetry were certainly unable to diminish my daily duties, nor did they eradicate my weakness and other faults Despite my resolution, which was renewed daily, to remain free and unattached, yet as time went on I became involved in peculiar situations that would have to be presented as dreams to make them credible During this period I was called to a patient whose nature and appearance attracted me so much that I did not want even to compare her with any woman I had known before Every time her presence made me feel intensely how very far I was drifting from my actual desire The young girl was regarded as a serious, even hopeless case After several examinations, however, I abandoned this opinion and convinced myself that hers was a delicate constitution, excessively fatigued by work, and requiring only some nursing to be able to cope with life We married, moved into the country, and with this my own recovery was also initiated

VII

THE DOCTOR AS PATIENT

You cannot be a perfect doctor till you have been a patient,
you cannot be a perfect surgeon till you have enjoyed in
your own person some surgical experience

Stephen Paget

JOHANN DIETZ

Offhand, one might expect that the physician turned patient would regard his illness objectively and consequently act more rationally than many of his patients. The case of Johann Dietz shows, however, that this is not necessarily the case. Dietz's description of his attack of dysentery shows that when a doctor falls ill, he may behave as unreasonably with respect to diet as any other patient. Also characteristic of the physician-patient is Dietz's attempt to connect his spontaneous cure with the astringent action of the pickles that he had eaten.

BUT in the meantime I fell ill, contracting dysentery, and so severe an attack that everyone thought, as did I myself that I should die of this painful malady. I lay in the tent covered with rags and sacks. No medicine could help me, I was quite unable to eat, whereas many were unwillingly putting up with short rations.

However, out of forethought for the future, I had assiduously picked up all sorts of victuals which we had found superfluous on the march and which others had thrown away, placing them in our armourer's cars—for, *nota bene*, the military chests were carried in them—and hitherto had not touched my rations. But I was unable to keep down any food. (Nevertheless, later, when the dearth became greater, they came in useful.)

But now I lay in my tent expecting my end. I was very feeble and exhausted, and quite forsaken, having no one who would fetch me a drink of water, so I had to pay dearly for service. By chance a musketeer was passing by who had a wooden skewer of pickled gherkins. I called out to him: "Friend, give me some too. I'll pay for them!" But he would not, saying: "If you want anything send to the Imperial camp on the Danube."

I pulled myself together, summoning up all my energies, so great was my longing for gherkins. Crawling rather than walking I came to the market-folk on the Danube, who had a whole vat full of them. For five Hungarians they gave me nearly a hat-full, which I ate with such a craving that I asked for more, to the tune of two Hungarians. And inside me everything went cold.

I set out on my journey back to the camp fully persuaded that it would be my last. I reached my tent. There was one of my comrades, who asked me where I had been, for he had not thought to see me back again. I told him what had happened. "Well," he said, "that's the last nail in your coffin, so prepare yourself."

I lay down, begging him to cover me up. This he did, as well as he could. He was still a true friend to me, it was he who had kept me going with apples, during the march. But then I had cured his arm, which had been shot through. Well, as soon as I laid myself down I fell asleep. He thought I was dead. I slept for some six or eight hours. Then it was as though I were newly born. The

pain and purging had ceased, there was no fever, in summa, I was well again

This is well worth noting, that what Nature craves for with inordinate desire is her medicine! She has indeed her reasons, for since the sickness was highly febrile and all the parts relaxed, the pickled gherkins were cooling and astringent. However, I can hardly copy this prescription into my prescription-book, much as a certain doctor wrote *Sauerkraut for fever!*

1728 — 1795

JOHANN GEORG ZIMMERMANN

Johann Georg Zimmermann, one of the prominent physicians of the eighteenth century, was born at Brugg, Switzerland, in 1728. He studied medicine at the University of Göttingen, under Albrecht von Haller, who regarded him as a favorite student (Zimmermann showed great attachment to his teacher, and later in 1755, wrote a biography of Haller). After further studies in Holland and France, he became municipal physician in Brugg. In 1768 he was called to a post as physician-in-ordinary at Hannover, which was then connected by a personal union with Great Britain. Catherine II, of Russia, attempted in vain to attract Zimmermann to her court.

In 1771, Zimmermann met Frederick the Great, of Prussia. As a result of his conversations with the king, and his observations during the latter's fatal illness (June 24 to July 11, 1786) when he was called into consultation, Zimmermann wrote two books *Frederick the Great and my Conversations with Him shortly before his Death* (1788), and *Notes on Frederick the Great* (1788).

Zimmermann was interested in anatomy, surgery, physiology, and botany, and wrote numerous medical as well as non-medical works. His long poem *Solitude* enjoyed wide popularity. In his medical works, he endeavored to write in a popular style, and in this lies his chief historical significance, for he was one of the first to present medical information so that it would be intelligible to the general educated public.

In 1771 Zimmermann underwent an operation for hernia at Berlin. His account of this experience gives a graphic picture of what surgery meant to a patient before the introduction of anesthesia.

ALL the consultations with many physicians and surgeons, both at home and abroad, did not satisfy me. Finally, my old friend Tissot advised me to go to a man we both knew to be the greatest in his field, the late Professor Meckel of Berlin. This I did, and this great and kind man promised me life and health, offered me the kindest care and all the help humanly possible within his own home and in the midst of his family, and kept every promise.

Behind my back the "experts" at Hannover turned up their noses, shrugged their shoulders, and believed that I was seeking death under the surgeon's knife at Berlin. Several of my colleagues were already dividing up my hide, and one of them had enough Christian kindness to tell me to my face that a

generally esteemed (now deceased) windbag would demand my pension, but that by divine and humane right it belonged to him! In the midst of all these expectations and accompanied by the wishes, hopes and tears of my friends, I left Hannover on June 8, 1771, to travel to my savior in Berlin

June 24 was the day that decided whether life or death awaited me in Berlin. The worthy, and now also deceased Herr Schmucker, Surgeon General of the Prussian Army, performed the operation, the kind-hearted Surgeon General Theden was his assistant. In addition a number of very skilled and also very famous men were likewise present, among them the great son of a great father, the present Professor Meckel of Halle, and the late Professor Voitus, for whom I still sorrow. Meckel, the elder, was the director of the entire business, and, conducted everything with his practical courage and profound experience, as well as through his equally great anatomical acumen.

I can still see how all these gentlemen, some of them with pallid lips and cheeks, stood about my high bed of pain, as I rapidly and joyfully opened the door, took off my clothes, and with trust in God—boldly and quickly threw myself on this bed. I did not want to be tied down, and without shedding a tear (from eyes that had shed millions of tears), without the slightest outcry, without fainting or resisting, I bore my operation as patiently as a lamb. It lasted 1½ hours, during which the knife was almost continuously in my body. According to the calculation of Surgeon General Theden I received approximately 2000 cuts with the knife. For a full three hours after this operation it looked as if I would die. I also believed it, and I pray God that I may be as resolved, calm, and happy in my last hour as I was then while suffering my dreadful pains. But my dear Meckel's helpful acumen and care recalled me from this condition to life. I spent twelve weeks on this bed of pain. After these twelve weeks I was as completely and thoroughly well as I am at this hour, more than sixteen years later, for which God be praised.

As I had no cares, the twelve weeks that I spent on my torture bed in Berlin were the happiest and most delightful days. I no longer paid attention to pain, even though the treatment with lunar caustic which my wounds frequently required almost provoked lockjaw and other convulsive movements. Anyone who has had experience with pain, as I have had for twenty years, will know the kind of infernal sensations, with which I was well acquainted, that are produced by lunar caustic. Nevertheless, I was always happy and gay again, as soon as the torture was past.

1795 — 1834

WENZEL KRIMER

In the course of Napoleon's Egyptian campaign, the French troops were attacked by an inflammation of the eyes (most probably trachoma). This ailment the troops brought back with them to Europe where it became widespread among the soldiers.

of the contending armies In England, the problem created by the prevalence of this disease led to the founding of the first special ophthalmic hospital, the London Eye Infirmary, in 1805 Krimer's experience is of considerable interest, in that it shows the lack of medical facilities for the treatment and care of such unfortunates

SO FAR I had borne all the hardships of the campaign, my health appeared indestructible Between Opotschno and Gratz, however, I was attacked by one of the most dreadful diseases that spread among us at that time with furious rapidity and turned many a stout soldier into a cripple It was contagious ophthalmia * from which very many suffered, and which blinded most of its victims permanently The strenuous daily marches, the intense heat of the sun mingled with the dreadful dust, the wet, cold nights spent under the open sky with very little cover against the elements, and in addition scanty as well as poor food, all these were probably responsible for that malignant disease

The malady attacked me suddenly one morning After two hours both eyes appeared as large as hen's eggs, protruded, and the pus flowed profusely The pain was enough to drive one frantic I was transported on a wagon, drawn by oxen Try to imagine my condition and that of my fellow sufferers, eight of whom shared the wagon with me, an open wagon exposed to the burning heat, constantly enveloped in a thick cloud of dust, while we, burning with fever, and parched with thirst, were without any help or care! It was frightful! Cold water compresses or moistened earth were the only remedy that I employed

One afternoon, despite all my misery and the terrible expectation of impending blindness, I could not refrain from laughing What happened was that our wagon turned over and all of us fell into a marshy ditch No one knew where he was, everyone cursed and raged, but the driver, a true Bohemian, spoke calmly and leisurely to his four oxen and righted the wagon We wanted to thrash him, whip him, and run him through, but the fellow understood not a word of all this I shouted at him abusively in Bohemian, and ordered him to help me out of the mud But he replied dryly that I would have to be patient, and despite my suppressed anger the fellow was right We nine blind soldiers were at the mercy of a Bohemian peasant lout The passing troops laughed at our soft resting place, there was nothing left for us but to laugh with them and to submit patiently in our disagreeable situation! In the end we even had to address the rascal with kind words, just to have him move us from the spot, for we could not prevent him from riding off and leaving us there

Late in the evening we arrived in Nachod and were unloaded in the center of the market-place I lay down flat with my face resting on the cool earth, just to relieve the terrible burning in my eyes I called to the passers-by to

* Most probably trachoma

take me to an apothecary, but in vain, the intensely bigoted people passed coldly by, or replied contemptuously, because they regarded all Prussians as Protestants "May you die, dog of a heretic!" Finally, an old man, whom I implored, in Bohemian, in the name of the most holy and pure Virgin Mary and all the Saints, to help, and whom I promised a rich reward, had mercy on me. He led me to an apothecary shop situated close by, where I obtained a bottle of Goulard water for which I paid a good, round sum in hard cash. This was the only medicament which I used as an eye-lotion. Strangely enough, it helped me with wondrous rapidity, while in hundreds of other cases it had no effect, and not infrequently even did more harm. On the following morning, I was already able to open my eyes, even though they were still painful and sensitive to light. Only one who has himself been threatened over a long period by permanent loss of vision, that most wonderful possession, can conceive the emotion that one feels when the heavenly light suddenly enters his darkened eye, and he can once again see God's beautiful creation!

1798 — 1859

WILLIAM A. ALCOTT

"Tuberculosis has naturally attracted its medical victims to its study," commented Sir Humphrey Rolleston, and the truth of his remark is attested by numerous instances. A case in point is the interesting story of self-cure related by William A. Alcott. The will power that Alcott showed likewise enabled him to overcome an addiction to opium.

WHEN, in the beginning of my medical career, I attempted to establish a temperance society, though I was exceedingly free from the charge of using distilled liquors, according to the tenor and spirit of the pledge, yet exposed, as I was, to colds, and delicate in constitution, and above all, particularly liable, in the daily routine of business, to temptation, I was yet one of those who lay aside one stimulus and retain or resort to another. I did not, indeed, use my substitute with much freedom, at first. The example daily before me, was sufficient, one would think, to deter me from excess, and so it proved. All I did for some time, whenever I had been particularly exposed and feared I had taken cold, was to go and swallow a small pill—say about a grain—of opium.

But as usually happens in such cases, though the pill seemed to remove all tendency to cold, or in other words to cure me for the time, the necessity for recurring to it became more and more frequent and imperious, till I was, at length, a confirmed opium taker. And yet—strange to say it—all the while I regarded myself as a rigid temperance man, nay, I was a violent opposer of the use even of opium as a daily stimulus, in the case of everybody but myself.

My apology was—and here was the ground of self-deception—that I only used it as a medicine, or rather as a medical means of prevention

It is, however, quite obvious to my own apprehension now, that a substance is hardly entitled to the name of medicine, in any ordinary sense of the term, which is used nearly or quite every day Yet to this stage of opium taking I soon arrived Nay I went even much further than this, and was, at length, pretty well established in the wretched habit of using this poisonous drug three times a day

In the summer of 1830, while under the full habitual influence of opium, I had a slight attack of dysentery It even went so far as to derange all my habits, and to break in, among the rest, upon my opium taking Opium or laudanum was, indeed, included in the prescription of my physician,—for I did not wholly rely on my own judgment in the case,—but as a habitual daily stimulus, at certain fixed hours, it was, of course, omitted As I began to recover, however, my old desire for the opium pill began to recur at the accustomed former hours, and with all its wonted imperiousness

In a moment of reflection, reason resumed her throne, and the inquiry came up, whether I should ever again wear the chain which had been temporarily loosened After a short debate, it was decided in the negative But a second question soon came up, whether I could keep my resolution This was a matter of serious inquiry, and it caused a somewhat lengthy mental discussion

During the discussion a new thought struck me It was a child's thought, perhaps, and yet it was interesting, and not to be despised for its simplicity and childishness It was that I would take my opium, what I had in the house, and after carefully enclosing it in my pill box, would make use of the box as a nucleus for the twine I was daily using "When I am inclined to break my resolution," thought I, "nothing shall be done till I have unwound the ball of twine I shall thus gain a little time for reflection, and perhaps before I come to the opium, I may permit reason to return and to mount the throne The trial shall, at all events, be made"

My resolution was carried into effect, and steadily adhered to The opium was fairly entombed in the twine, where, for aught I know, it still remains Most certainly I never saw it more, nor have I ever tasted any of the opium or laudanum family, from that day to the present, whether in sickness or in health

A course of medical lectures which I heard in 1825-6, left me, in March, 1826, in about as bad a state of health as school keeping usually had done However, I was too indigent, I might even say too destitute, to be idle Scarcely was my license to practise medicine and surgery fairly in my pocket, than I found myself turning towards the district school again Yet I did not continue it many weeks before my old enemy returned upon me with renewed strength, till I was at length compelled to abandon the school entirely

I had as much as I could do, in attempting to keep up a successful war with cough, night-sweats, purulent expectoration, and hectic fever

This was one of the darkest periods of my life. Destitute of money, and even somewhat in debt, yet too proud or self-relying to be willing to ask my friends to aid me, my hopes of usefulness defeated in two favorite fields of activity, teaching and medicine, and practically given up to linger out a year or two and then die, how could I avoid discouragement? Was it strange even, if I approached at times, the very borders of despair?

For some time prior to this crisis—indeed at certain seasons all my life long,—I relied not a little on medicine, in various forms, especially in the shape of tonics. Strange that I should have done thus, when my general impressions were so unfavorable to its exhibition, and yet such inconsistencies have been, and may be again. Huxham's tincture, quassia, ale, and other bitter infusions and tinctures, had been successively invoked, and I still clung to ale. I also used some wine, and I attached a good deal of importance to a stimulating diet. But it was all to no purpose, the disease was marching on steadily, and appeared destined to triumph, and that, too, at no very distant period.

In these circumstances, I repeat, what could be done? Nature's extremity is sometimes said to be God's opportunity. But without assuming that there was any special providence about it, I will say, that I was driven to desperation, nay almost to insanity or madness. I deemed myself on the very verge of a mighty precipice, beneath which yawned a gulf unfathomable. I must make a last mighty struggle, or perish irretrievably and forever.

It was July 4th, the anniversary of American Independence, I sought and found a few moments of calm reflection, and began to interrogate myself. Why was I so dependent on the physician and the apothecary's shop, and so tremblingly alive to every external impression of atmospheric temperature, or purity? Why must I, at the early age of twenty-eight, be doomed to tread the long road of decline and death? Why can I not declare independence of all external remedial agents, and throw myself wholly on nature and nature's God? I know, full well, the laws of my being. If trust in these, and faithful and persevering obedience will not save me, nothing will. Thus I mused, but alas! it was to muse only. Though almost ready to take the critical step,—I will not say make the desperate plunge,—the fourth of July finally passed away, and found me still lingering, to use a Scripture expression, "between the porch and the altar."

July the fifth at length arrived. And is it all over? I said to myself. Has the "glorious" *Fourth* gone by and I have not acted up to the dignity of a well-formed and glorious resolution? Must I alas! now go on to woe irretrievable? Must I go down to the consumptive's grave? Must I perish at less than thirty years of age, and thus make good the declaration that the wicked shall not live out half his days?

A new thought came to me. "One of the South American provinces celebrated her Independence today, the fifth. I will take the hint,—I will yet be

tree I will escape from present circumstances I will fly from my native home, and all that pertains to it I will fly from myself,—It is done,” I added, “and I go with the first conveyance ”

I could indeed walk a little distance, but it either set me to coughing, severely, or else threw me into a profuse perspiration which was equally exhausting One favorable symptom alone remained, a good appetite and tolerable digestion Had there been, in addition to the long train of troublesome and dangerous symptoms above mentioned, a loss of digestive power and energy, with colliquative diarrhoea, my hopes must have been forever abandoned

But I had made my resolution, and was prepared to execute it, let the consequences be what they might With little more than a single change of clothing, I contrived to find a conveyance before night, quite beyond my immediate neighborhood Fatigued, at length I stopped, and without much delay, committed myself to the friendship of Morpheus

On the top of a considerable eminence, in the very midst of a mountain range, one of the most delightful in all New England, only a few miles from the place of lodging, was a tower some sixty or seventy feet high, which commanded a view of the surrounding country I had often wished to enjoy the prospect which this tower afforded Was there, now an opportunity? I had the leisure, had I the needful strength? Could I possibly reach it? And by what means?

I rested for the remainder of the day and the night following, at the foot of the eminence, in order to prepare myself for the excursion of the following morning It was as much as I could do, that night to take care of my irritable and irritated lungs At length, however, I slept, and was refreshed The only drawback upon my full renewal, was my usual night—or rather as I ought to say morning—perspiration, which was quite drenching and exhausting, though not much worse after all my fears than usual

God is good, I said to myself, when I saw from my chamber window the top of the hills I wished to climb, and perceived that the first rays of the morning sun were already falling upon them By the middle of the forenoon I was at the foot of the mountain, and prepared to ascend it After a little rest, I wound my way to the tower, and finally to its top, when I took a survey of what seemed to me like a new world Here I renewed my declaration of independence with regard to those earthly props on which I had so long been wont to lean, and of dependence on God, and on his natural and moral enactments

Here, too, I formed my programme for the day and for the week Distant from the point which I occupied not more than eight miles was a most interesting educational institution I had long wished to see, and near it was an old acquaintance, with whom I might perhaps spend the Sabbath, which was now approaching Could I carry out my plan? Had I the needful strength?

My resolution was at length made, and no sooner made than begun to be

executed The public houses on the way were miserable things, but they were better far than none

They gave me a temporary home, such as it was I reached the institution, had a partial view of it, and, half worn out with my week's labor, was glad to rest the seventh day, "according to the commandment," in the house of an old acquaintance

Monday morning came, and with the aid of the intervening Sabbath, brought to my attenuated and almost sinking frame a new recruit of strength With a new object of interest some fifteen miles distant, I was once more on the road I could now walk several miles a day without greatly increasing my cough, or ride in a stage coach many miles Nor was the nightly perspiration, nor even that which was induced by exercise, any more distressing than it had been, if indeed it was as much so

In due time I reached my point of destination, and curiosity became fully gratified What next? A few miles distant was a high mountain which I greatly desired to climb I reached its base, but the heat was great, so dog-days like, that my courage failed me I had the necessary strength, but dared not use it for such a purpose Perhaps I acted wisely

Twelve miles in the distance still was my father's house, now grown from a few patrimonial acres to full New England size, viz , a hundred acres or more, and well cultivated My wandering abroad had given me a little strength and very much courage Why should it not? Was it not truly encouraging that while I was making a long excursion, chiefly on foot, in the heat of midsummer, my cough and hectic and night sweats should become no worse, while my muscular strength had very much increased?

My mind's eye turned towards my father's house as a place of refuge In a day or two I was in it, and in another day or two I was caparisoned as a laborer, and in the field It is true that I did not at first accomplish a great deal, but I held the implements of husbandry in my hands, and spent a certain number of hours every day in attempting to work Some of the workmen laughed about me, and spoke of the vast benefits to be derived from having a ghost in the field with them, but I held on in spite of their jokes I had been accustomed of old to the labor of a farm, which greatly facilitated my efforts Habit is powerful

Not many weeks passed ere I was able to perform half a day's work or more in a day My consumptive tendencies, moreover, were far less exhausting and trying In a word, I was better The Rubicon was already passed I did not, indeed, expect to get entirely well, for this would have been a hope too big for me But I should not die, I thought, immediately Drowning men, as you know, catch at straws, and this is a wise arrangement, for otherwise they would not often be saved by planks

One point, at least, I had gained I was emancipated from slavery to external forms, especially medicated forms But I had not only declared and found myself able to maintain independence of medicine, but I had acquired much

confidence in nature and nature's laws And this faith in the recuperative powers of nature was worth more to me than worlds would have been without it

1821 — 1910

ELIZABETH BLACKWELL

Medicine, like so many other occupations, entails certain hazards for those who practice it Doctors who are particularly interested in communicable diseases are liable to contract these infections, which thus become occupational diseases For example take the case of Elizabeth Blackwell, the first woman to obtain a medical degree in the United States While studying obstetrics at La Maternité in Paris, she inadvertently infected one eye with "purulent ophthalmia,"* as a result of which she lost her vision in this eye

SUNDAY, November 4—Served all day in the infirmary, and witnessed M Dayau's first application of the serrefine I felt all the afternoon a little grain of sand, as it were, in one eye I was afraid to think what it might be, for in the dark early morning, whilst syringing the eye of one of my tiny patients for purulent ophthalmia, some of the water had spurted into my own eye It was much swollen at night, and in the morning the lids were closely adherent from suppuration

November 5—I applied for permission to leave until the eye was well, and was refused I went to the infirmary of the *élèves* and informed M Blot that I was prisoner He examined the eye carefully, discovered that it was the dreaded disease, consulted his chief, and then told me that as everything depended on the early active treatment, he should give up the first days entirely to me He expressed much sympathy, arranged everything for me in the most thoughtful way, and I went to bed—I little knew for how long! I despatched a note to my sister, and then active treatment commenced—the eyelids cauterised, leeches to the temple, cold compresses, ointment of belladonna, opium to the forehead, purgatives, footbaths, and sinapisms, with broth for diet The eye was syringed every hour, and I realised the danger of the disease from the weapons employed against it Poor Anna came down in the evening to sympathise with the "inflamed eye" I had written about, and was dreadfully shocked She has told me since how many times she hid behind the curtain to cry My friendly young doctor came every two hours, day and night, to tend the eye, Mlle Mallet acting in the alternate hours The infirmary was kept profoundly quiet, and a guard appointed day and night The sympathy was universal and deep, the *élèves* asking after me with tears An unheard-of permission was granted to Anna to visit me three times a day For three days this continued—then the disease had done its worst, and I learned from the tone

* Probably gonorrheal

of my friends that my eye was despaired of Ah! how dreadful it was to find the daylight gradually fading as my kind doctor bent over me, and removed with an exquisite delicacy of touch the films that had formed over the pupil! I could see him for a moment clearly, but the sight soon vanished, and the eye was left in darkness

For three weeks I lay in bed with both eyes closed, then the right eye began to open gradually, and I could get up and do little things for myself How kind everybody was! I shall never forget it Anna, with her faith in magnetism, came down regularly three times a day in rain and snow to sympathise and impart "the vital fluid" My friendship deepened for my young physician, and I planned a little present for his office Madame Charrier entered into it with spirit, we had long discussions together, and finally secured an elegant pair of lamps for his consultation-rooms, which I hurried through the corridors to see, bundled up in my dressing-gown, and shawl, looking and feeling very much like a ghost The lamps were conveyed to his room that night The next morning he came to me evidently full of delight, and longing to be amiable, yet too conscientious to infringe the rules of the Maternité by acknowledging the present

Wednesday, 26th —Off actually! I dressed for the first time Bandaged and veiled, the carriage drove to the door, Anna guided me in I made kind adieux, caught glimpses of stone walls, in the cold dull light, and thus ended my Maternité life I felt very weak, and laughed hysterically the whole evening

The following letter, written at this time to an uncle, an officer in the British army, shows the important support which the mind can render the body in combating disease,—

Dear Uncle,—I thank you with all my heart for the kind sympathy you have expressed for me so warmly Fate certainly gave me a strange and sudden blow, but now I am up again strong and hopeful, and eager for work, and I beg uncle to feel quite sure that a brave soldier's niece will never disgrace the colours she fights under, but will be proud of the wounds gained in a great cause, and resolve more strongly than ever to "conquer or die" In truth, dear friends, the accident might have been so much worse that I am more disposed to rejoice than to complain Even in its present state the eye is not a very striking disfigurement, and it will gradually become still less so As to the more serious consideration—loss of vision—I still hope to recover that in time, and meanwhile the right eye grows daily stronger I can write without difficulty, read a little, and hope soon to resume my usual employments I certainly esteem myself very fortunate and still mean to be at no very distant day *the first lady surgeon in the world*

1813 — 1883

J. MARION SIMS

During most of the nineteenth century, large areas of the United States were intensely malarious. This was the case in and around the town of Mt Meigs in Alabama where Marion Sims settled after leaving his native Lancaster, where he had lost his first patients (see page 172). Everything went well with him here, until one day he came down with malaria. The onset and course of this illness he later described in his autobiography.

EARLY in July (1840), about the 5th or 6th, as I was returning from Mr Abercrombie's plantation, I felt a slight chill pass over me, and the sensation ran down my spine. I soon reached home and went to bed. There was a slight reaction afterward, and I did not consider myself a sick man. The next day I visited patients, had no paroxysm of fever, and did not fear any return of it. The next day, however, at eight o'clock in the morning, my wife and myself were walking in the garden, looking at the peas and beans, and other little things, growing so finely, when, all at once, a little shiver ran down my back. I went into the house and was put to bed. This chill increased in severity, and it was nothing like I had had two days before. At twelve o'clock, four hours from the first sensations of chilliness, I was in a complete collapse, with no pulse above the wrist, and a cold, clammy sweat on me, with great internal heat, jactitation, and labored breathing, and the utmost prostration—yet with my intellect clear and undisturbed.

There was no doctor anywhere near. My wife and two sisters, and Mr George Brown, who a year before wished to make a merchant of me, were there. They gave me stimulants and had me wrapped up in mustard-plasters. I felt that I was dying. There was no reaction, I was rubbed and plastered, and there was nothing else to be done, or that could be done. I felt that I could possibly live but a few hours, that I must certainly die. But how hard is death for the young, when life is full of promise, and how hard it was for me to leave my wife and children, knowing that they would have to struggle with the cold world, and its hardships, without much money to aid them, for when we were married I had nothing, and Theresa had only a little. I did feel at one time that I would speak to her, I hated to think of her ever loving and marrying another man. All these thoughts came to me when I thought I was dying. Then I said to myself, "I will not be so mean as to speak to her and annoy her on this subject, I will die as I am, and Providence will take care of her." No man ever died with more of the consciousness of death than I experienced then. I am sure that I was in a moribund state.

I felt that I was sinking and disappearing from the world. As I lay on my back, things became smaller, and my wife and sisters seemed to be sinking

more and more, and gradually to be receding from me and from the room I seemed to be sinking down into a narrower and narrower and lower channel, and then I would shut my eyes and immediately open them again. Calling reason to my aid again, I would try to discover the manner and secret of death, and, although but a second would elapse from their opening, still it seemed to be an eternity. I looked upward, and I thought my friends were twenty or thirty feet away from me. I could hear their voices quite distinctly and understand all that was said, but I gradually sank lower, and lower, and lower, till I looked up through the narrow channel in which I lay, and I could see them fifty or one hundred feet above me. When I called again my own reason, I knew that I was on the same level with them. But I had the sensation that I was sinking lower and lower, getting weaker and weaker, that soon my eyes would be closed, and I should see them no more forever.

Almost at the last, when I seemed to be a great distance below my wife and sisters, I whispered, "Can you not make a mustard-plaster as broad as my back and as long?" I feel that I am dead in everything except my intellect, and that is so obscured that I seem to be a great distance below you, and yet my senses tell me that I am on the same level with you." As quick as it could be done, the plaster was spread, just as I had ordered. I was rolled over, and the plaster was placed on the spine, from the nape of the neck, the whole length, and as broad as the back itself. I turned over upon this, and in the course of I know not how long—it might have been fifteen minutes, and it may have been an hour, for I had no way of measuring time—I felt a slight sensation of warmth in the region covered by the plaster. That warmth was agreeable, it was not at all uncomfortable as it increased, and, strange to say, just in proportion as the burning increased on the back, in just that proportion I seemed to experience relief. I began to improve with the burning, for when it was placed there I was sinking down, down, down, but, as the plaster began to burn, it resisted this sinking oppression, and I felt myself gradually rising, gently, gently, gently, getting nearer to my wife and my sisters, until I was within a few feet, seemingly, of the top of a great pit, into which I had been sunken. After a while the burning increased in my back, and I looked around on the same level with the rest of the family. I could breathe freely, and I felt that life was coming back to me again. Strange to say, at the time I seemed to rise to the surface the cold, clammy sweat was beginning to disappear, warmth began to return to my body generally, and in the course of four hours it was seen that there was a possible chance for me to recover. I was in a collapse, from twelve o'clock until eight.

By eight o'clock at night I had got a pulse, my skin was warm and dry, my head was clear, and I was saved. These were the sensations of death that I know I should have had if I had died. If it had not been for the providential application of the mustard-plaster, and the proper remedies, at the proper time, I should surely have died.

1822 — 1902

ADOLF KUSSMAUL

In his reminiscences, Kussmaul includes accounts of several illnesses that befell him, among them a detailed description of an acute inflammation of the spinal cord resulting from severe chilling. In this case we have a careful subjective case-history presented by a master of clinical observation. Noteworthy also is the degree to which a medical patient will sometimes direct the treatment of his own case.

AFTER having enjoyed good health for three years in Kandern, until February 1853, I felt myself equal to all the exertions of medical practice, but now I was taught otherwise. Until then the winter had been strikingly mild, in December and January the rose bushes in the gardens were still producing flowers, while snow and ice did not come until February. Throughout the entire winter the number of patients had been large, now it increased to such an extent that I could hardly cope with the practice. Hardly a night passed when I was not driven from bed by the house bell in order to prescribe or to visit patients, now in the city, now in the villages. Only rarely was I able to eat at the proper time, nor did I eat enough. Finally, in order not to impede my movement, particularly while riding in the hills, I dressed much too lightly. When I used the carriage, I had to be my own driver. Eventually, my one horse, which was both saddle-horse and carriage-horse, was no longer enough, and I had to get a second one.

Albert Bitzius, the Bernese pastor, who, under the name of Jeremias Gott-helf, wrote the best peasant novels that I know, has described faithfully the hardships of mountain practice in his masterly story based on actuality, "*Wie Anna Jowaeger haushaltet und wie es ihr mit dem Doktern erging*"*. I can assert this, for I became acquainted with them sufficiently as a result of my own experience. Even a body of steel runs the danger of succumbing, and mine was not made of steel. Two of my later assistants in Freiburg, young men who were capable and devoted to their duty, fell victims of their profession after short periods of practice in the mountains, one of them where I had practised.

In order to give some idea of the demands of such a practice, I relate the story of the serious illness that befell me at the end of February.

In response to the urgent letter of a colleague, the district doctor Schweik-hard of Schopfheim, whom I held in particular esteem, I betook myself to a consultation in the village of Tegerneu in the district of Schopfheim, a village situated high in the hills which could be reached from Kandern only by means of poor, frequently steep roads. I rode away from my house before sunrise, and did not return until late in the evening when darkness had fallen. In many

* How Anna Jowaeger kept house and how she fared with her doctoring.

places there was slippery ice, so that I had to dismount and lead the horse cautiously by the reins, and the snow penetrated through my boots. On the way home I had a feeling in the soles of my feet as if I was walking on rough felt, it was a feeling of numbness in the skin, the serious significance of which I failed to recognize.

Hardly had I gone to bed fatigued, when there appeared a peasant from Egringen, a village located near the Rhine, to fetch me to his wife who was suffering with an incarcerated inguinal hernia. He had already called me from my bed the night before, but the consultation with Dr. Schweikhard could not be put off, and I had therefore referred him to other doctors. The latter, however, had not succeeded in reducing the hernia, and so he had come again. There was nothing else to do but to go with him, and to see what my skill would be able to accomplish. In fact, I did succeed in relieving the poor woman's misery, but not until I had had her placed in a warm bath. While thus engaged, the night had passed. It had taken some time until a bath-tub was found in the village, and the water had been heated in a wash-tub. By the time I returned home, day had already dawned. There could be no thought of rest, as I was busy the entire day, but I hoped to make up for the lost sleep the next night. In this hope, I was unfortunately disappointed.

I had just stretched out under the cover, when the pitiless nightbell rang again. A messenger called me to the child of a pastor in the village of Hertingen with whom I was friendly. It was supposed to be suffering from croup, but as I soon determined, it was only a matter of a simple, acute catarrh of the upper respiratory passages. In any case I had brought along an emetic from the pharmacy and I stayed with the child until it had acted.

Thus, by the time I came home day had dawned again and new work awaited me. It was snowing heavily, and immediately after dinner I had to go by sled to the remote Mangenhardt farm. The road was partly covered over with snow and could not be followed closely, on the way back the sleigh capsized, and half my body sank into the deep snow. I came home soaked to the skin and freezing, but I was unable to go to bed immediately. Finally, I retired, but could not become warm, and it was only towards midnight that I fell into a light sleep. Suddenly, I was awakened by stabbing pains in the left lower part of the chest, in the back. I feared a pleurisy, but had no difficulty in breathing. I spent a sleepless, feverish night, and was just about to fall asleep in the morning when the town barber-surgeon appeared to remind me that I had promised this morning to operate for a hare-lip on a girl who was living in his house. She had already been operated on once as a child, but without success, and expected that my efforts would be successful because I had removed this disfiguring defect in a boy from her village. So I got up even though I felt so miserable, and went to work. The operation was successful, the girl obtained a pretty face, soon found a husband and emigrated with him to North America.

On my return to my dwelling, I still had to deal with several woodsmen

before I finally found the bed rest for which I longed. Now my illness was easy to diagnose. I felt a great weakness in both legs, and was hardly able to stand on them. They were paralyzed, the feet were numb, cramps of the calves set in as well as complete paralysis of the bladder. Apparently I was suffering from an inflammation of the spinal cord or of its membranes in the lowest part of the spinal column. A terrible prospect opened up before me. The inflammation would either ascend from the lumbar section of the cord to the cervical region, paralyze my arms and finally the respiratory organs, so that I would suffocate, or it would stop lower down, and probably result in a paralysis of the lower half of my body which would make me permanently incapable of practicing my profession.

My situation was very bad. Above all else I needed surgical assistance. Unfortunately I knew that the colleague who practised in the town with me had never introduced a catheter, for he had told me so himself, and had left this manipulation which was so common, so important and not infrequently difficult to the barber-surgeon, whose skill I did not quite trust. Luckily I remembered that Dr. Theodor Schneider, one of my friends from Basel, who until recently had been an assistant in the surgical clinic, had given up his position in order to travel to America in a few weeks. At the moment he was just visiting his uncle, Pastor Schneider, in Feldberg near Mülheim. I sent a messenger to him, but I could not await my friend's arrival, my torment became unbearable, and towards noon I was compelled to entrust myself to the barber-surgeon. Although he achieved his aim, the operation was followed by an inflammation. In the evening my friend arrived. With sacrificial devotion he remained with me for several weeks, and attended to me and my patients, no one in my entire life has obligated me to greater gratitude than he. Today my friend and samaritan, having retired from medical practice, lives in Dornach near Basel.

At that time our anatomical knowledge of the diseases of the spinal cord still stood on a weak foundation. I conjectured that I was suffering from a *Meningitis lumbaris* of rheumatic origin, and that it involved a turbid, watery exudation into and between the membranes of the lowest sections of the spinal cord and its nerve tracts, an exudation similar in character to the fluid found in the joints in acute rheumatism. The preceding circumstances and the absence of other known causes, particularly infectious, justified me in regarding my illness as rheumatic. This gave me some consolation, as I had already once before recovered from a serious rheumatic illness. I became still more hopeful when the inflammation did not ascend during the following days.

On the very first day I took a Vienna draught, in order to facilitate the flow of the venous blood from the spinal canal to the abdominal cavity, and on the following days attempted to restore the disturbed activity of the skin by means of warm baths. My condition remained unchanged, however, I suffered a great deal from pains and cramps in my legs, and with support I could stand laboriously, but I was unable to walk.

Towards the end of the first week, impatience and worry led me to undertake a drastic cure which I would not have dared with another patient. It was based mainly on my confidence in the therapeutic effects of tartar emetic which I had so often tested on myself. This medicament acted on me with certainty even in a small dose of one grain (0.6 gm) producing extremely profuse excretions, enormous effusions, which, I hoped, would drain off the fluid that had been exuded into the spinal canal. Consequently, I took a one-grain dose three times in a single week—one dose every other day—on an empty stomach, and on these days I lived only on water gruel. The excretory effect was always equally strong, and from the moment when the third dose had exerted its effect, the use of the catheter was no longer necessary and the cramps and pains disappeared, although the paralysis of the legs receded much more slowly. It was not until the middle of April that I was able to leave my bed, and only at the beginning of May could I venture out of the house. It took many years, until I recovered completely from the paralysis.

In April while I was still in bed—friend Schneider had departed—there occurred an incident which I have never forgotten. A peasant who did not know that I was ill, wanted to fetch me to his child. He was in his forties and presented a splendid picture of manly power. I referred him to my colleague in Kandern. As he walked out of the room on his strong legs, I sighed: "Oh, if I could only exchange my paralyzed corpse for the sound body of this peasant"—Eight days later I was visited by my colleague, and I inquired about the child. "The child recovered rapidly," he replied, "but the peasant is dead." Horrified, I cried out: "Impossible!" Yet it was true, this man who was apparently in such excellent health had died suddenly. Since this experience I have never again envied any person his blooming appearance.

1815 — 1896

JULIUS THOMSEN

Sometimes a disease is first brought to our knowledge by a medical sufferer. The best, if not the only instance of this is Julius Thomsen's description in 1876 of a disease of the muscles (*Myotonia congenita*) which was hereditary in his family. In recognition of his contribution, the condition is also known as Thomsen's Disease.

THE first indications of this condition manifested themselves in my case as far back as I can recall. Already as a boy when I was called unexpectedly it was often impossible for me to arise immediately from my chair. If I did stand up rapidly, my legs were seized by tonic contractions that frustrated any attempted forward movement. If I then tried to gather my will-power in order to compel my legs to move, I would fall down and lie as stiff as a board.

for a while, unless I had been able before that to grasp some supporting object with my hands. When I had time to await the relaxation of the contraction, the volitional impulse gradually made its way, almost palpably, along the nerve tracks to the corresponding muscles. After the machine had once started I was just as quick and nimble as the boys of my age and in running I exhibited greater endurance than the others. At the same time it was always necessary to exercise a certain amount of caution, a lesson that I had learned early. For if some unforeseen obstacle, no matter whether a thought or a sudden sensory stimulus, affected me, or if I stubbed my toes on some unnoticed object, the movement stopped suddenly and it might easily happen that I would fall.

I was an orphan, and often had to accept abuse and even corporal punishment from my guardians who had no understanding for this condition, but I was even more mortified by the scoffing and derision of my playmates. As I was ambitious, these undeserved mortifications exerted an extremely detrimental influence on my disposition, producing a marked irritability, just as the concealment of my condition which I practised since childhood likewise exercised a prejudicial influence on my entire character. With the calmness of my age I recognize this, but it was a quite natural consequence.

Puberty had no essential influence on the malady. Only after I reached adult manhood did I learn to overcome somewhat better the difficulties of voluntary movement, and through constant care and training to conceal my natural awkwardness. Unfortunately I did not devote myself to gymnastic exercises as I should have done, since they can contribute a great deal to the improvement of the condition, something that I understood too late. In part this was due to the greater difficulty, as well as the pain, which though not very great is always bound up with the spasms, in part to the fear of calling down upon myself the curse of ridiculousness. Even now in my old age I must struggle enough with this old enemy.

I have described here the characteristic symptoms of this affection as they manifest themselves in me, because they are the same in all those affected by it, except that they are more pronounced in the one, and less pronounced in another. I have said that I felt the malady as long as I can remember, and I may add that I have already discovered and recognized its first signs on the arms and hands in others, namely, some of my children, while they were still in the cradle. As far as I can judge, this malady prevailing in my family is to be traced back to my maternal grandmother.

1848 — 1915

EDWARD L. TRUDEAU

It is not infrequent for medical men who have fallen victim to a certain disease to make it their specialty. Sometimes such attention leads to important achieve-

ments In 1871 Edward L Trudeau developed pulmonary tuberculosis, and as a result of his own experience became a pioneer in the open-air treatment of the disease in his sanatorium at Saranac Lake, in upper New York State

WHILE at Little Neck I had had on two or three occasions attacks of fever, but as nearly everybody had malaria I was told it was malaria and took quinine which, however, did little good After we moved into town I felt tired all the time, but thought it was the confinement of city life and paid but little attention to it One afternoon I was at the dispensary with Dr Walton, and he insisted that I looked ill and took my temperature To my astonishment it was 101° Walton advised me to go to Dr Janeway and have my lungs examined, but I laughed at the idea Of course there could be nothing the matter with my lungs! His insistence worried me, however, and next morning as I went by Dr Janeway's office on West Fourteenth Street the idea struck me that I would go in and have my lungs examined, so that next time Walton berated me about my health I would be able to tell him there was nothing the matter

Even at that early date Dr Janeway's great skill in physical diagnosis was recognized, and he had a class at Bellevue for physical diagnosis to which I belonged He received me cordially and began the examination at once When this was concluded he said nothing So I ventured, "Well, Dr Janeway, you can find nothing the matter?" He looked grave and said, "Yes, the upper two-thirds of the left lung is involved in an active tuberculous process"

I think I know something of the feelings of the man at the bar who is told he is to be hanged on a given date, for in those days pulmonary consumption was considered as absolutely fatal I pulled myself together, put as good a face on the matter as I could, and escaped from the office after thanking the doctor for his examination When I got outside, as I stood on Dr Janeway's stoop, I felt stunned It seemed to me the world had suddenly grown dark The sun was shining, it is true, and the street was filled with the rush and noise of traffic, but to me the world had lost every vestige of brightness I had consumption—that most fatal of diseases! Had I not seen it in all its horrors in my brother's case? It meant death and I had never thought of death before! Was I ready to die? How could I tell my wife, whom I had just left in unconscious happiness with the little baby in our new home? And my rose-colored dreams of achievement and professional success in New York! They were all shattered now, and in their place only exile and the inevitable end remained!

How little I could have realized then how many thousand times it would fall to my lot in a long professional life to tell other human beings the same dreadful truth! I think my own experience that day in Dr Janeway's office was never forgotten and helped, every time I made a positive diagnosis of tuberculosis, to make me as merciful as was compatible with truthfulness and the welfare of the patient Besides, it was not many years before a new hope, a hope which it was part of my life's work to help develop and demonstrate,

could honestly be held out to patients, for the diagnosis of tuberculosis does not now carry the sinister meaning that attached to it in the early seventies

I was still stunned when I reached home, and though I tried to make the result of Dr Janeway's examination as encouraging as possible, my wife soon realized the ominous import of what he had found, and together we discussed the future calmly. We were in the month of February and Dr Janeway had advised me to go South at once, so we started for Aiken within a few days. I had been told to live out of doors and ride on horseback, and no doubt I made matters much worse by the horseback riding, for I developed daily fever and was no better when I returned to New York early in April.

I was allowed and even urged to exercise daily, in the misguided belief that it would improve my appetite and keep me from losing strength, but the result naturally enough was that my fever kept up and that I lost weight and strength steadily.

Another baby was expected soon in our household and we decided to make no plans for the summer until after its arrival. My friend Dr Walton was a great help in these days, and by his interest and daily calls did what he could to cheer us both. I had to give up work, however, and as sickness was a new experience to me at that time I rebelled and struggled against it and was thoroughly unnerved by it. I have had ample opportunity in the past forty years to get used to illness and suffering, but it took me a long time to learn, imperfectly though it be, that acquiescence is the only way for the tuberculous invalid to conquer fate. To cease to rebel and struggle, and to learn to be content with part of a loaf when one cannot have a whole loaf, though a hard lesson to learn, is good philosophy for the tuberculous invalid, and to his astonishment he often finds that what he considers the half-loaf, when acquiesced in, proves most satisfying. It was many years, however, before I learned this great lesson, but when once learned it made life fuller and happier.

Our boy was born on May 18, 1873, and a week later Lou Livingston and I set out for Paul Smith's. I was influenced in my choice of the Adirondacks only by my love for the great forest and the wild life, and not at all because I thought the climate would be beneficial in any way, for the Adirondacks were then visited only by hunters and fishermen and it was looked upon as a rough, inaccessible region and considered a most inclement and trying climate. I had been to Paul Smith's in the summer on two occasions before on short visits with my friend Lou Livingston and his mother, and had been greatly attracted by the beautiful lakes, the great forest, the hunting and fishing, and the novelty of the free and wild life there. If I had but a short time to live, I yearned for surroundings that appealed to me, and it seemed to meet a longing I had for rest and the peace of the great wilderness.

It was a sad home-leaving, as my wife and my friends considered me most seriously if not hopelessly ill, and she was still in bed with the baby at her

side and little Chatte in the nurse's arms Dr Walton saw me off and comforted me by his promises to look after "the wife and kids," and help my little family to move down to the rectory at Little Neck for the summer I finally tore myself away and was helped into the cab by my friend Lou, who at once began to dilate on what sport we should have at Paul's, but my heart was heavier than it had been since my brother's death

The first day we went to Saratoga by train and rested there overnight, and the next day by train to Whitehall and by boat through Lake Champlain, reaching Plattsburg at supper time I had a raging fever all day, went to bed at once on reaching the Fouquet House, and was too ill and weak the next morning to attempt the long trip into the wilderness to Paul Smith's, so we had to wait at Plattsburg two days Lou Livingston told me afterward that the hotel people had tried to dissuade him from taking me on such a long journey and to such a rough and remote place as Paul Smith's, and had urged him to induce me to return home Whenever he hinted at a return home, however, I was evidently so upset at the idea that he decided to go on with me

On the third day we started on a little branch iron-ore road for Ausable Forks where the mines were, and from there we had to drive forty-two miles to Paul Smith's most of which was over a rough corduroy road

The sun was just setting as I caught sight of the great pines around Paul Smith's and in a minute we were driving up to the door of the hostelry, a swarm of guides and fishermen were clambering off the steps and the horse-block, and many hands extended in welcome

During the entire journey I had felt gloomy forebodings as to the hopelessness of my case, but, under the magic influence of the surroundings I had longed for, these all disappeared and I felt convinced I was going to recover How little I knew, as I shook hands with the great, strong men who came up to my room that evening to say a word of cheer to me, that forty-two years later most of them would be dead and that I should still be in the Adirondacks and trying to describe my first arrival at Paul Smith's as an invalid!

Soon Katie Martin, Mrs Paul Smith's pretty sister, came in with a word of welcome and cheer and a tray on which were eggs, brook trout, pancakes and coffee, and I ate heartily and with a real relish for the first time in many a long week

The good result of the winter's stay in my case, as well as in that of Mr Edgar who stayed at Saranac Lake during the same winter I spent at Paul Smith's, drew Dr Loomis's attention to the value of the Adirondack climate for tuberculous patients and induced him to advise other such patients to remain through the winter In 1876 he published a paper in *The Medical Record*, drawing attention for the first time to the climatic value of this region for pulmonary invalids

When with some hesitancy I proposed to my wife my plan of our remaining in the Adirondacks all winter she acquiesced at once, though in those days

wintering in the Adirondacks was much like wintering in the Klondike now I never realized until later how selfish my decision to remain in such a remote place was, and how hard it must have been for her. If this plan were carried out, not only would she be cut off from all intercourse with friends, but in my precarious state of health she knew if I were taken very ill no help could be secured, and she must carry the anxiety alone. The nearest doctor was at Plattsburg, a sixty-mile drive, often through unbroken roads. My wife, however, has never been the nervous, overanxious type, but always self-contained, meeting quietly and bravely all the ills and sorrows that have come to us in life. We were young and happy together with our children, and were not inclined to borrow trouble, thus it came about, thanks to her quiet courage, that we decided to face the terrors of an Adirondack winter, sixty miles from a doctor or a railroad and entirely cut off from all connection with the outside world.

1870 — 1946

ARTHUR E. HERTZLER

Self-treatment is a not uncommon pastime among members of the medical fraternity. This kind of activity may vary in degree from the taking of a pill to complete operations performed on himself by the doctor. Descriptions of such personal experiences are of special interest because in them the doctor records subjective manifestations that are not easily accessible to others. A case in point is Arthur Hertzler's account of how he opened an abscess of the neck.

THE shortest trip I ever made to reach my patient may be mentioned, the trip being short because I was the patient and surgeon. Following one of my attacks of erysipelas I developed an abscess of the neck. One night about two o'clock the pain became unbearable. So I prepared a local anesthetic, a few instruments and placed a looking glass on the kitchen table and proceeded to hunt for the abscess. An incision behind the facial artery failed to locate the abscess, so I made another one in front of this vessel. I bored a dissecting scissors into the depth of my neck until the abscess was reached, then I hooked an index finger in each handle of the scissors and gave a violent jerk. This made an opening as wide as the blades of the scissors were spread. I put in a rubber tube. The problem was somewhat complicated by the fact that the eye on the side of the abscess was completely swollen shut and I had to work with one eye. Ever since that experience when I open an abscess I know that the patient is going to have immediate relief and a nice sleep. I had many a chuckle over this experience. The nerve of it was not in making the opening but in the viewpoint. I was but a kid but I knew anatomy better than anyone else available. Besides, it was in the small hours of the morning and I had en-

dured that throbbing for days and that was enough Enough to me always has been enough I was generally regarded as a modest kid but I was plenty cocky under the skin

1841 — 1905

HERMANN NOTHNAGEL

While some doctors have specialized in the study and treatment of diseases after having been attacked by them, it is of equal interest to note the striking coincidences where medical men who have paid particular attention to a disease have eventually fallen a victim to their specialty For example, Hermann Nothnagel, professor of medicine at Hamburg, Jena and Vienna, and a leading clinician of his time, was a recognized authority on angina pectoris, and it was from this disease that he died To the very last, Nothnagel was the clinical scientist, as shown by the following notes found on his night table, and undoubtedly written shortly before his death

ATTACKS of stenocardia with extremely severe pains, pulse very variable during attack, first slow, about 56-60, very regular, very tense, then rapid again, 80-90, rather equal and regular, finally completely arrhythmic, very unequal, sometimes rapid, sometimes slower, with varying tension The first indications of these attacks date back some 3-4 years, at first very weak, gradually more marked Actual attacks with severe pains appeared only five or six days ago Written on July 6, 1905 late in the evening after I just had three severe attacks

1845 — 1933

RICHARD DEWEY

The doctor may look at illness with the eye of the scientific clinician, or he may regard it with a youthful spirit and a will to health If proof be needed, witness the following lines written in 1929 by Dr Dewey following an emergency operation for a pyloric perforation He was treated by Dr Leroy B Sherry, of Pasadena, and made a remarkable recovery While convalescing, he meditated in the following vein

Meditations of a Gastro-enterostomisé

Not long ago old Father Time and I
Again looked one another in the eye
Quoth he "You now have passed your eighty-third,
You seem to be a rather tough old bird,
From me you can expect but little more,
Behave yourself and even up the score,

I gave you a pyloric perforation—
Don't think that you deserve the least laudation
Because you have survived the operation—
The Surgeon's skill and pluck were your salvation ”

Then I resentfully and proudly spoke
“A gastro-enterostomy's no joke,
Yet, thanks I'm feeling now quite merry—
Despite dry law I had some shots of Sherry ”

VIII

THE DOCTOR GOES TO WAR

But when, at last the light of day was drowned,
That madness ceased Ah, God, but it was good
There, in the reek of iodine and blood,
I flung me down, upon the thorny ground

Francis Brett Young

AMBROISE PARÉ

During medieval military campaigns, care of the wounded and the sick was originally entrusted to anyone who volunteered in response to proclamations. Later, it became customary in European armies to enlist for this purpose chiefly persons who had been trained as barber-surgeons. The average army surgeon remained ignorant for a long period, but there were individual men such as Ambroise Paré, who made outstanding practical and scientific contributions to medicine.

Born in 1510 at Bourg-Hersent near Laval, in the old province of Maine, he was apprenticed to a barber-surgeon in his youth, and then went to Paris where he worked at the Hôtel-Dieu for some time. In 1536 Paré began his career, crossing the Alps as surgeon to Mareschal de Montejan, colonel-general of the French Infantry. During this campaign he made his first important contribution to surgery. He discovered that gunshot wounds are not "poisoned" as had previously been believed, and consequently that they are best healed by the application of soothing medicaments rather than of boiling oil. Thenceforth, Paré took the field with the French armies in many campaigns. In 1552 he was appointed surgeon to the French king, Henri II, in which capacity he served, in turn, François II and Charles IX. After 1559 Paré no longer followed the armies, but lived and worked in Paris. He died in 1590, at the age of eighty.

Paré's other important contributions to surgery were the doctrine that bleeding after amputations should be arrested by simple ligature, and not by cauterization, his advocacy of podalic version, a method of turning the child in its mother's womb before delivery in certain abnormal cases, and finally, the ingenious artificial limbs which he designed and used for wounded soldiers from about 1560 on.

None of these contributions was completely without precedent. It was due to Paré, however, that they were rediscovered and spread among the surgeons of his time. Equally significant is the example of his personality. The essential integrity, honesty and modesty of the great surgeon are most clearly seen in his *Apology and Account of his Journeys into Divers Places*.*

NOW all the said soldiers at the Château, seeing our men coming with a great fury, did all they could to defend themselves, and killed and wounded a great number of our soldiers with pikes, arquebuses and stones, where the surgeons had much work cut out for them. Now I was at that time a fresh-water soldier, I had not yet seen wounds made by gunshot at the first dressing. It is true that I had read in Jean de Vigo, first book, "Of Wounds in General," chapter eight, that wounds made by firearms participate of venenosity, because of the powder, and for their cure he commands to cauterize them with oil of elder, scalding hot, in which should be mixed a little theriac and in order not to err before using the said oil, knowing that such a thing would bring great pain to the patient, I wished to know first, how the other surgeons did

* This book was published in 1585 in reply to an attack made on Paré by Etienne Gourmelen in his book on surgery.

for the first dressing which was to apply the said oil as hot as possible, into the wound with tents and setons, of whom I took courage to do as they did. At last my oil lacked and I was constrained to apply in its place a digestive made of the yolks of eggs, oil of roses and turpentine. That night I could not sleep at my ease, fearing by lack of cauterization that I should find the wounded on whom I had failed to put the said oil dead or empoisoned, which made me rise very early to visit them, where beyond my hope, I found those upon whom I had put the digestive medicament feeling little pain, and their wounds without inflammation or swelling having rested fairly well throughout the night, the others to whom I had applied the said boiling oil, I found feverish, with great pain and swelling about their wounds. Then I resolved with myself never more to burn thus cruelly poor men wounded with gunshot.

Our soldiers sallied forth on the enemy before their trenches were made where there would be many killed and wounded by arquebus shots and by the sword as many on one side as on the other, where I had much work cut out for me of such sort that I had no rest neither day nor night for dressing the wounded.

And I would tell this in passing, that we had put many of them in a great tower, laid on a little straw, and their pillows were stones, their coverlets were their cloaks of those that had them. When the artillery was active, as often as the cannon fired, the wounded said they felt pain in their wounds, as if one had given them blows with a stick, the one cried his head, the other his arm, and so with the other parts, and with many their wounds bled afresh, even in greater quantity than at the time they were first wounded, and then it was I must run to staunch them. *Mon petit maistre*, if you had been there, you would have been much hindered with your hot irons. You would have had need of much charcoal to redden them, and I believe they would have killed you like a calf for your cruelty. Now by this devilish tempest of the echo of these cannon engines, and the great and vehement agitation of the collision of the air, resounding in the wounds of the injured, many died, and others, because they could not rest by reason of the clamors and cries which were made day and night, and also for lack of good food, and other things necessary for the wounded. Now, *mon petit maistre*, if you had been there you could have ordered them jellies, restoratives, gravies, pressed meat, broth, barley water, almonds, blanc-mange, prunes, damsons, and other viands proper for the sick, but your ordinance would only have been accomplished on paper, for in effect there was nothing to have but the flesh of old tainted cows which were taken around Hesdin for our munition, salted and half-cooked, in such sort that he who would eat it, must tear it with the strength of his teeth, as birds of prey do their food.

I would not forget the rags with which they were dressed, which were only rewashed every day and dried at the fire, and therefore were as hard as parchment. I leave you to think how their wounds could do well. There

were four big, fat prostitutes to whom was given charge of the washing of the linen, who acquitted themselves of it to the strokes of a stick, and likewise they had no water at their command, and less soap That is how the poor sick died for lack of food and other necessary things

Now having heard the resolution for the surrender of the place, I knew that our affair did not go well and for fear of being known I gave a velvet coat, a satin doublet, a cloak of fine cloth lined with velvet to a soldier, who gave me a sorry doublet all torn and frayed with use, and a collar of leather well worn, and a miserable hat, and a short cloak I smeared the neck of my shirt with water with which I had mixed a little soot Likewise I rubbed my hose with a stone at the knees and above the heels as if they had been worn a long time I did as much to my shoes, in such sort that I had sooner been taken for a chimney sweep than for a surgeon to the King I went in this guise to Monsieur de Martigues and I prayed him that he would arrange it so that I should remain with him to dress him, which he accorded willingly, and had as much wish that I should remain with him as I had myself

Soon after the commissioners who had charge of selecting the prisoners entered the château, the seventeenth day of July, 1553, where they took Messieurs le Duc de Bouillon, le Marquis de Villars, de Roye, le Baron de Culan, Monsieur du Pont, the commissary of the artillery, and Monsieur de Martigues, and me with him (because of the prayer which he made them to do it), and all the gentlemen who they knew were able to pay any ransom, and the greater part of the soldiers and chiefs of companies, having so many and such prisoners as they wished

Being led from the château into the city with Monsieur de Martigues, there was a gentleman of Monsieur de Savoie who asked me if the wound of Monsieur de Martigues could be cured, I told him no, that it was incurable He promptly went away to tell it to Monseigneur le Duc de Savoie Now I thought that he would send physicians and surgeons to visit and dress Monsieur de Martigues Meanwhile I discussed with myself if I should play the simpleton, and not let myself be known as a surgeon, for fear that they should keep me to dress their wounded, and that in the end I should be known to be surgeon to the King and they would make me pay a large ransom On the other side I feared that if I did not show myself to be a surgeon, and to have well dressed Monsieur de Martigues, they would cut my throat Forthwith I resolved to show them that he would not die for want of having been well dressed and succoured Soon after, behold, there came many gentlemen, accompanied by a physician and a surgeon of the Emperor, and those of the said Seigneur de Savoie, with six other surgeons of the army, to see the wound of the said Monsieur de Martigues, and to know of me how I had dressed and treated him The Emperor's physician bade me declare the essential nature of the wound and how I had treated it Now all the spectators had a very attentive ear to know if the wound was mortal or not

I commenced to discourse to them, how Monsieur de Martigues looking

over the wall, to reconnoitre those who were sapping it, received a shot from an arquebus through the body, where presently I was called to dress him I saw that he cast out blood by his mouth and his wound, moreover, he had great difficulty on inspiration and expiration, and cast wind by the said wounds with a whistling, insomuch that it would blow out a candle, and he said he had a very great stabbing pain at the entrance of the bullet I thought and believed that this could be some splinters of bone which pricked the lungs when they made their systole and diastole I put my finger within where I found the entrance of the ball had broken the fourth rib in the middle, and splinters of bone which the said ball had forced in, and the going forth of it had likewise broken the fifth rib with splinters of bone which had been driven from within, outwards I drew out some but not all because they were very deep and adherent, I put in each wound a tent, having the head large enough, attached by a thread, for fear that by the inspiration, they should be drawn into the cavity of the thorax, which has been known by experience to be detriment of the poor wounded, because having fallen within, one cannot withdraw them, which is the reason that they engender putrefaction, as a thing contrary to nature The said tents were anointed with a medicament made of the yellow of eggs and Venice turpentine, with a little oil of roses My intention in putting in the said tents was to arrest the blood and to guard against the exterior air entering the chest, which had been able to chill the lungs and by consequence the heart The said tents were put there also so that they would give issue to the blood diffused in the thorax I put on the wounds a large plaster of diachylon in which I had mixed oil of roses and vinegar, for the purpose of avoiding inflammation, and then applied large compresses soaked in oxycrate and bandaged him, but not too hard, so that he could breathe easily That done I drew from him five porringers of blood, from the basilic vein of the right arm, so as to make revulsion of the blood, which ran from his wounds into his thorax, having first taken indication from the wounded parts, and chiefly, his qualities considering his youth and the sanguine temperament Soon after he went to stool, and by his urine and stool evacuated a great quantity of blood And as to the pain, which he said he felt at the entrance of the bullet, as if he had been pricked with a bodkin, that was because the lungs, by the movements, beat against the splinters of the broken rib But the lungs are covered with a tunic coming from the pleural membrane, having issue with the nerves of the sixth conjugation from the brain which was the cause of the pain which he felt

Likewise he had great difficulty in inspiring and expiring, which came from the blood diffused in the cavity of the thorax, and on the diaphragm, the chief agent in respiration, and from the lacerations of the muscles which are between each rib, which aid also in inspiration and expiration, and likewise because the lungs were wounded, and torn, and lacerated by the ball, which had caused him to spit black and putrid blood in coughing Fever seized him soon after he was wounded, with weakness of the heart. The said

fever seemed to me to come from the putrid vapors arising from the blood which was outside its vessels, which had flowed and will flow more. The wound of the lungs had grown larger and will grow larger [yet], because it is in perpetual movement both in sleeping and waking, and expands and compresses itself to attract the air to the heart and throw the fuliginous vapors out. By the unnatural heat is made inflammation, then the expulsive quality forces out by cough that which is obnoxious to it. But the lungs themselves cannot purge but by coughing, and in coughing the wound is enlarged, and grows yet more, from which the blood goes forth in greater abundance, which blood is drawn from the heart by the arterial vein, to give them (the lungs) their nourishment, and to the heart by the vena cava. His food was barley broth, prunes with sugar, at other times bread soup, his drink was a ptisan. He could lie only on his back, which showed that he had a great quantity of blood diffused in his thorax which, spreading itself along the vertebrae, did not compress the lungs as much as it would lying on his sides or seated. What more shall I say, but that my said Seigneur de Martigues never had a single hour's rest after he was wounded, and always evacuated bloody urine and stools. These things considered, Messieurs, one can make no other prognosis, except that he will die in a few days, to my great grief.

Having ended my discourse, I dressed him, as I was accustomed. Having uncovered his wounds, the physicians and surgeons, and other witnesses present, knew the truth of that which I had said to them. The physicians having felt his pulse, and knowing his forces were almost prostrated and depressed, agreed with me that in a few days he would die. And directly they went to the Duc de Savoie and told them Monsieur de Martigues would die in a short time. He answered them that possibly if he had been well dressed, he could have escaped. Then they all said with one voice he had been very well dressed and cared for with all things appertaining to the curing of his wounds, and it could not be better, and that it was impossible to cure him, and that his wound was necessarily mortal. The Monsieur de Savoie showed himself very much displeased, and wept, and asked them again if for certain they all held him for lost, they answered only yes.

Then a Spanish impostor presented himself, and promised on his life that he would cure him, and that if he failed to cure him they should cut him in a hundred pieces, but he would have no physicians, surgeons, nor apothecaries with him, and at once Monsieur de Savoie said to the physicians and surgeons that they should go no more to see Monsieur de Martigues. Also he sent a gentleman to me bidding me on pain of my life not to touch Monsieur de Martigues. Which I promised not to do of which I was very glad seeing that he would not die in my hands. And he commanded this impostor to dress Monsieur de Martigues, and that he should have no other physicians nor surgeons but him. He asked for a shirt of the said Monsieur de Martigues and he tore it in little strips, which he placed like a cross, murmuring and muttering certain words over the wounds, and having clothed him, permitted

him to eat and drink all that he would, saying to him that he would diet for him, and he did, eating but six prunes and six morsels for his repast, drinking only beer Nevertheless, two days afterwards the said Monsieur de Martigues died, and my Spaniard, seeing him in his agony, hid himself and got away without saying goodbye to anyone, and I believe that if he had been taken, he would have been hanged and strangled for the false promise which he had made to Monseigneur le Duc de Savoï, and to many other gentlemen He died about ten o'clock in the morning, and after dinner Monseigneur de Savoï sent again the physicians and surgeons, and his apothecary, with a quantity of drugs to embalm him They came accompanied by many gentlemen and captains of the army

I embalmed the body, and it was placed in a coffin After that the surgeon of the Emperor drew me apart and said that if I would remain with him he would treat me well, and that he would clothe me anew, also that he would make me go on horseback I thanked him very much for the honor he did me, but said that I had no desire to serve foreigners to my country Then he told me that I was a fool, and that if he was a prisoner like me, he would serve a devil to be put at liberty In the end I told him flatly that I did not wish to stay with him

The physician of the Emperor returned to Seigneur de Savoï, where he declared the cause of the death of Seigneur Martigues, and that it was impossible for all the men in the world to have cured him, and confirmed to him again that I had done all that it was necessary to do, and prayed him to take me into his service and said to him more good of me than there was

Having been persuaded to take me in his service, he gave charge to one of his maîtres d'hôtel, named Monsieur du Bouchet, to tell me that if I wished to remain in his service he would use me well I answered him that I thanked him very humbly, but that I had decided not to remain with any foreigner This my answer being heard by the Duc de Savoï, he was greatly angered, and said I ought to be sent to the galleys

Monsieur de Vaudeville, governor of Gravelines, and colonel of seventeen ensigns of infantry, prayed him to give me to him to dress an old ulcer that he had had on his leg for six or seven years Monsieur de Savoï told him that for what I was worth he was content, and that if I put the fire to (cauterize) his leg, it would serve him right He answered that if he perceived anything like it, he would cause my throat to be cut

Soon after Seigneur de Vaudeville sent four German halberdiers of his guard to seek me which astonished me very much, not knowing whither they led me, they not speaking any more French than I did German Being arrived at his lodging, he told me that I was welcome and that I belonged to him, and that, as soon as I had cured him of an ulcer which he had on his leg, he would give me my freedom (cong  ) without taking any ransom of me I told him that I had no means of paying any ransom

He asked me if I thought to cure his ulcer, I told him yes, provided

that he was obedient and did that which was needful. He promised me that he would do entirely what I wished and ordered, and that so soon as his ulcer was cured, he would give me liberty to return without paying any ransom. Then I prayed him to come to a better settlement with me, remonstrating that the time would be too long to be out of liberty, until he should be entirely cured, and that within fifteen days I hoped to do so that his ulcer would be diminished more than one-half, and would be without pain, and for that which remained his surgeon and physician could finish the cure. He granted this. Then I took a piece of paper to take the size of the ulcer, which I gave him, and kept another by me. I prayed him that he would keep his promise, when he knew the work was done. He swore to me on the faith of a gentleman that he would do it. Then I resolved to dress him well, according to the method of Galen, which was that after having taken all foreign matters from the ulcer, and that there remained nothing but filling in with flesh, I dressed him only once a day, and he found that very strange, and likewise his physician who was but freshwater [green] who wished to persuade me, with the patient, to dress him two or three times a day. I prayed him to let me alone, that what I did was not to prolong the cure, on the contrary to shorten it, for the desire that I had to be at liberty, and that if he would look in Galen, in the fourth book, "Of the Composition of Medicaments according to their kinds," that if a medicament does not remain a long time on the part, it does not profit so much as when it is left a long time, a thing which some physicians have ignored, and have thought that it is better to change the plasters often, and this bad custom is so inveterate and rooted that patients even often accuse the surgeons of negligence that they change not more often the plasters, but they are deceived.

The Seigneur de Vaudeville would understand if that which I alleged from Galen was true, and commanded his physician to look there for it, and as he wished to know it for himself. He caused the book to be put on the table, where my words were found true, and the said physician was made ashamed, and I very glad. The Seigneur de Vaudeville desired no more to be dressed more than once a day, of such sort that within the fifteen days his ulcer was nearly cicatrized. The agreement being made between us, I began to be merry. He made me eat and drink at his table, when there were no more men of rank than he and me.

Soon after Monsieur de Vaudeville was very well of his ulcer, and it was nearly cured which was cause that he should give me leave to go, and he caused me to be conducted with a passport by a trumpet as far as Abbéville, where I took post, and sought the King Henri my master at Aufmon who received me gladly and with good grace. He sent for Messieurs de Guise, the constable and d'Estres to hear from me that which had passed at the taking of Hesdin, and I made them a faithful report of it, and assured them I had seen the great pieces of artillery they had taken to Saint Omer, of which the King was glad, because he had feared the enemy would come further into

France He gave me two hundred écus to take me home, and I was glad to be at liberty, and out of the great torment and noise like thunder of the devilish artillery and far from the soldiers, blasphemers and deniers of God I wish to say that at the taking of Hesdin the King was told that I was not killed but that I was a prisoner He made Monsieur du Gogulier, his first physician, write to my wife that I was living and that she should not be troubled, and that he would pay my ransom

1745 — 1813

BENJAMIN RUSH

One phase of the activity of Benjamin Rush in the cause of the American Revolution is his work as a military surgeon As soon as war against the British government broke out, Rush volunteered to serve in the field, and was accepted In his capacity of army surgeon, he demonstrated his ability by writing a practical manual of hygiene for the soldiers in the Continental Army However, Rush also saw action in the field, as he relates in the following account

IN THE evening an account was received that the British Army then at Princeton intended to attack our posts at Trenton and Crosswicks A council of war was held at Gen'l Washington's quarters to determine what steps should be taken to oppose them A division took place in the council upon the question, whether the troops at Crosswicks should be drawn to Trenton or left where they were to occasion a diversion of the British forces Gen'l Knox proposed as I was connected with Gen'l Cadwalader's corps, I should be called into the council to give an opinion upon the question I was accordingly sent for, and heard from Gen'l Washington a brief state of the controversy He then asked my advice I said that I was not a judge of what was proper in the business before the council, but one thing I knew well, that all the Philadelphia militia would be very happy in being under his immediate command and that I was sure they would instantly obey a summons to join his troops at Trenton After this information I retired, and in a few minutes I was called in again and requested by Gen'l Washington to be the bearer of a letter to Gen'l Cadwalader I readily consented and set off for Crosswicks at ten o'clock accompanied by Wm Hall, one of the Philadelphia troop of horse The weather was damp and the roads muddy and the night extremely dark When we came within a mile of Crosswicks we met Col Delany who had the command of the patrols He rode up to me and presenting a cocked pistol to my breast demanded who I was I answered, "an old friend" "I don't know you, sir," said he, "tell me your name," still holding his pistol to my breast I then told him my name and my business He ordered us to be conducted to Gen'l Cadwalader's quarters, to whom in his bed I delivered Gen'l Washington's letter It was then about one o'clock He instantly rose and set his brigade

in motion We reached Trenton about 7 o'clock in the morning I went to Gen'l St Clair's quarters and begged the favor of his bed for a few hours Just as I began to sleep an alarm gun was fired at the General's door I started up and the first creature I saw was a black woman crying and wringing her hands in my room She was followed by General St Clair with a composed countenance I asked him what was the matter He said the enemy were advancing, and "What do you intend to do," said I "Why fight them," said he with a smile He then took down his sword, and girded it upon his thigh, with a calmness such as I thought seldom took place at the expectation of a battle I followed him out of the room and mounted my horse in order to join the Philadelphia militia I met them a little below Trenton, and rode slowly along with them towards the enemy I asked one of them, John Chaloner, "how he felt" He answered, "as if I were going to sit down to a good breakfast" The greatest part of the day was spent by the troops under arms In the afternoon a cannonade began in which several soldiers were wounded All was now hurry, confusion and noise General Washington and his aids rode by the Philadelphia Militia, in all the terrible aspect of war General Mifflin in a blanket coat galloped at the head of a body of Pennsylvania Militia He appeared to be all soul I recollect the ardor with which he called to them to quicken their steps His command was not without effect They ran after him General Knox was active and composed In passing me he cried out, "Your opinion last night was very fortunate for us—you have—" I shall not conclude the sentence, for a man deserves no credit for an accident in which neither design nor judgment are discovered The cannonade continued between the two armies for several hours, towards evening a few platoons of musketry were fired The American army retired and left the British in possession of Trenton The scene which accompanied and followed this combat was new to me The first wounded man that came off the field was a New England soldier His right hand hung a little above his wrist by nothing but a piece of skin It had been broken by a cannon ball I took charge of him and directed him to a house on the river which had been appropriated for a hospital In the evening all the wounded, about twenty in number, were brought to this hospital and dressed by Dr Cochran, myself, and several young surgeons who acted under our direction We all laid down on some straw in the same room with our wounded patients I slept two or three hours About four o'clock Dr Cochran went up to Trenton to enquire for our army He returned in haste and said they were not to be found We now procured waggons, and after putting our patients in them directed that they should follow us to Bordentown, to which place we supposed our army had retreated At this place we heard a firing, we were ignorant from whence it came, until next morning, when we heard that General Washington had met a part of the British army at Princeton on his way to the high lands of Morris county in New Jersey—through a circuitous route that had been pointed out to him the night before by Col Jos Read, and that he had defeated them We set off immediately for Princeton, and near the

town passed over the field of battle, still red in many places with human blood. We found a number of wounded officers and soldiers belonging to both armies. Among the former was General Mercer, an American, and a Captain McPherson, a British officer. They were under the care of a British surgeon's mate, who committed them both to me. General Mercer had been wounded by a bayonet in his belly in several places, but he received a stroke with a butt of a musket on the side of his head, which put an end to his life a week after the battle. When I went into Captain McPherson's room, I was introduced to him by my name. "Are you Dr. Rush (said he) Captain Leslie's friend?" I told him I was. "Oh! sir (said he) he loved you like a brother." This amiable and accomplished young man, Captain Leslie, the second son of the Earl of Leven, fell in the battle near Princeton. His death had been announced to me the morning before by a prisoner who belonged to his company. I joined Captain McPherson who belonged to the 17th regiment with him in tributes of affection and praise to his memory. His body was thrown into his baggage waggon, and carried by the American army along with them. It was discovered at Pluckamin. In his pocket was found a letter from me, in which I had requested that if the fortune of war should throw him into the hands of the American army, to shew that letter to General Washington or General Lee, either of whom would I hoped indulge him in a parole, to visit Philadelphia where I begged he would make my house his home. This letter was carried to General Mifflin, who obtained an order in consequence of it to bury him with the honors of war, in the churchyard of Pluckamin. In the summer of 1777, I visited his grave, and plucked a blade of grass from it, and at the end of the war placed a stone over it with an inscription designating his age, family, rank in the army, and the time and manner of his death.

Captain McPherson was wounded in the lungs. He recovered, in consequence of the loss of 140 ounces of blood.

Four British soldiers had their legs amputated by my order. They all recovered.

As soon as my wounded patients were out of danger, I set off to attend my duty in Congress. I passed a few days with my wife, at my kinsman's, Col Hall's, on my way to Baltimore.

1754 — 1844

JAMES THACHER

One of the best known and most interesting of the journals of the Revolutionary War is that of Dr. James Thacher, a practicing physician of Plymouth, Massachusetts. In 1775 when he had just completed his medical studies, he applied for appointment as an army surgeon. His diary records the severity of the test that he was given, and that he passed it successfully. Thacher's principal military assignments were in hospitals at Boston, Ticonderoga, in the Hudson Valley, and he

was also present at the siege of Yorktown. While serving in the Revolutionary Army, Thatcher acquired wide experience in military medicine.

His *Military Journal* gives a vivid picture of the spirit of the army, and provides detailed observations on men and events, especially under the adverse circumstances of hunger, fatigue, and cold. Thatcher's *magnum opus* is the *American Medical Biography*, published in 1828. This work is an outstanding sourcebook for the history of American medicine.

24th October, 1777—This hospital is now crowded with officers and soldiers from the field of battle, those belonging to the British and Hessian troops are accommodated in the same hospital with our own men, and receive equal care and attention. The foreigners are under the care and management of their own surgeons. I have been present at some of their capital operations, and remarked, that the English surgeons perform with skill and dexterity, but the Germans, with a few exceptions, do no credit to their profession, some of them are the most uncouth and clumsy operators I ever witnessed, and appear to be destitute of all sympathy and tenderness towards the suffering patient. Not less than one thousand wounded and sick are now in this city, the Dutch church, and several private houses, are occupied as hospitals. We have about thirty surgeons and mates, and all are constantly employed. I am obliged to devote the whole of my time, from eight o'clock in the morning to a late hour in the evening, to the care of our patients. Some of our soldiers' wounds, which had been neglected while on their way here from the field of battle, being covered with putrefied blood for several days, were found on the first dressing to be filled with maggots. It was not difficult, however, to destroy these vermin by the application of the tincture of myrrh. Here is a fine field for professional improvement. Amputating limbs, trepaning fractured skulls, and dressing the most formidable wounds, have familiarized my mind to scenes of woe. A military hospital is peculiarly calculated to afford examples for profitable contemplation, and to interest our sympathy and commiseration. If I turn from beholding mutilated bodies, mangled limbs, and bleeding, incurable wounds, a spectacle no less revolting, is presented, of miserable objects, languishing under afflicting diseases of every description—here, are those in a mournful state of despair, exhibiting the awful harbingers of approaching dissolution—there, are those with emaciated bodies, and ghastly visage, who begin to triumph over grim disease and just lift their feeble heads from the pillow of sorrow. No parent, wife, or sister, to wipe the tear of anguish from their eyes, or to soothe the pillow of death, they look up to the physician as their only earthly friend and comforter, and trust the hands of a stranger to perform the last mournful duties. Frequently have I remarked their confidence in my friendship, as though I was endeared to them by brotherly ties. Viewing these unfortunate men as the faithful defenders of the liberties of our country, far separated from their dearest friends, who would be so lost to the duties of humanity, patriotism, and benevolence as not to minister to their comfort, and pour into their wounds the healing balm

of consolation? It is my lot to have twenty wounded men committed to my care, by Dr Potts, our Surgeon General, one of whom, a young man, received a musket ball through his cheeks, cutting its way through the teeth on each side, and the substance of the tongue, his sufferings have been great, but he now begins to articulate tolerably well. Another had the whole side of his face torn off by a cannon ball, laying his mouth and throat open to view. A brave soldier received a musket ball in his forehead between his eyebrows, observing that it did not penetrate the bone, it was imagined that the force of the ball being partly spent, it rebounded and fell out, but on close examination by the probe, the ball was detected, spread entirely flat on the bone under the skin, which I extracted with the forceps. No one can doubt but he received his wound while facing the enemy, and it is fortunate for the brave fellow that his skull proved too thick for the ball to penetrate. But in another instance, a soldier's wound was not so honorable, he received a ball in the bottom of his foot, which could not have happened unless when in the act of running from the enemy. This poor fellow is held in derision by his comrades, and is made a subject of their wit for having the mark of a *coward*.

1759 — 1832

JAMES MANN

James Mann was an American army surgeon who served three years in the Continental Army, another three years during the War of 1812, and who wrote most interestingly of military medical problems. His chief work was published in 1816, at Dedham, Massachusetts, and is entitled *Medical Sketches of the Campaigns of 1812, 13, 14*. It is to this book that we are indebted for most of our knowledge of the medical service of that war. It gives a vivid picture of army life, of the medical questions that had to be solved, and occasionally throws an interesting light on the personality of the author. The selection presented below is a letter contained in Mann's *Medical Sketches*, which describes an incident of the War of 1812, and in so doing expresses the ultimate purpose of military medicine, to treat the soldier at the earliest possible moment and thus to save as many lives as possible.

General Hospital, Burlington
April 28, 1814

To Brigadier General Smith

SIR—It is with pain, I am obliged to state to you, that three men of — regiment, have since the 15th instant, found their way, or been brought into the general hospital in an irregular manner. It has been reported, these men have had no medical aid, previous to admittance. Had it not been for the call of humanity, they would not have been so received, but their condition was deplorable. One, brought last evening in a dying state, lived a few hours only. The sick are not so numerous, at this time, but that they may be faithfully attended

by the surgeons of regiments. If the last man had been seasonably reported, his life might have been spared. The last part was the duty of the surgeon to attend to, and where there is no surgeon, it becomes the duty of the immediate commanding officer of company. Of what use can it be to send a dying man to the hospital, except to give the hospital department the credit of *killing*, and trouble of *burying* him! If men are sent, in cases where they cannot be attended or cured by their own regimental surgeon, it is desirable to have them reported before they are in a moribund state.

Very respectfully, &c
JAMES MANN, Hospital Surgeon

1785 — 1853

WILLIAM BEAUMONT

William Beaumont, who was to become famous as America's pioneer physiologist, was born in Connecticut in 1785. After a period of study under a preceptor, he was licensed to practice in 1812. In December of that year, Beaumont was appointed a surgeon's mate in the Army. He saw much active service, and in his Diary recorded many events of the War of 1812. Beaumont was present at the Battle of York (Canada), where the British before retreating blew up the powder magazine, killing sixty and wounding three hundred Americans.

At the end of the war, Beaumont re-entered civilian life, but in 1820 he again joined the Army, and was assigned to Fort Mackinac, Michigan, where in 1822 he was to have his rendezvous with fate. As a result of his successful treatment of a Canadian voyageur, who had accidentally been shot in the stomach and upon recovery was left with an aperture in the stomach wall, Beaumont was able to study and extend greatly the knowledge of gastric digestion. His *Experiments and Observations on the Gastric Juice and the Physiology of Digestion*, published in 1833 at Plattsburg, is now a medical classic.

In 1839 Beaumont left the service and settled in St. Louis, where he lived and practiced until his death in 1853, honored and esteemed by all.

SAIL'D into harbour & came to anchor a little below the British Garrison — We now fill'd the boats, & affected a landing, though not without some difficulty, & the loss of some men—the British, march'd their troops from the Garrison down the beach to cut us off in landing, & tho they had every advantage they could not effect their design, a hot engagement ensued in which the Enemy, lost nearly a third of their men & were soon compelled to quit the field leaving their dead & wounded strewd in every direction—We lost but very few in the engagement —The enemy return'd into garrison but from the loss sustain'd in the 1st engagement the undaunted courage of our men, & the brisk firing from our fleet, into the Garrison with 12 & 32 pounds [pounds] they were soon oblig'd to evacuate it & retreat with all possible speed—driven to this alternative they devised the inhuman project of blowing up their

Magazine (containing 300 Bbls Powder) the explosion of which, shocking to mention, had almost, totally destroyed our Army—above 300 were wounded, & about 60 killed dead on the spot by stones of all dimentions, falling like a shower of hail in the midst of our ranks—the Enemy had, about 20 killed & wounded by the expln tho the main body had retreated far out of the Garrison—After this sad disaster our Army marchd into the Garrison hawl'd down the Brittish coulours (which they were too haughty to do) & raisd the American Standard on it place—Our Army was about 1500 strong—Theirs about the same—Encampt in Garrison this night—mounting a guard 500 strong to secure our safety thro the night—A most distressing scene ensues, in the Hospital—nothing but the Groans, of the wounded & agonies of the Dying are to be heard—The Surgeons, wading in blood, cutting of arms, legs & trepanning heads to rescue their fellow creatures from untimely deaths—to hear the poor creatures, crying—Oh, Dear! Oh Dear! Oh my God! my God! Do, Doctor, Doctor, Do cut of my leg! my arm! my head! to relieve me from misery! I cant live! I cant live! would have rent the heart of Steel, & shocked the insensibility of the most harden'd assassin & the cruelest savage! It awoke my liveliest sympathy, & I cut & slashed for 48 hours, without food or sleep—my God! who can think of the shocking scene, where his fellow creatures, lye mashed & mangled in evry part with a Leg—an Arm—a head, or a body ground in pieces without having his very heart pierced with the acutest sensibility, & his blood chill in his veins—then who can behold it without agonizing sympathy—

1780 — 1840

HEINRICH VON ROOS

The son of an officer in Wurttemberg, Heinrich von Roos became a military surgeon in 1805. As his native land was a member of the Confederation of the Rhine, he participated in the French campaigns of 1805, 1806, 1807, and 1809. Von Roos then accompanied Napoleon's Grand Army, and survived the retreat from Moscow. The narrative of his experiences during the Russian campaign gives a vivid and exciting account of the tragedy of the Grand Army. Von Roos was captured at the Beresina, and later entered the Russian civil service in St. Petersburg. His memoirs of the Russian campaign were written soon after his capture, but were not published until 1832. The burning of Moscow—Napoleon's Stalingrad—as described by von Roos, is unforgettable.

I CANNOT say whether it happened in the center of the city, or on its outskirts, for one is easily deceived at night. Yet I believe it was in the middle of the city where an explosion of such terrible force occurred that the first thought to come to the mind of everyone who heard and saw it must have been that a powder magazine had exploded, or a mine had gone off. Balls of fire ascended in large and small arcs from a huge column of flame, as if large

numbers of bombs and howitzer grenades had been ignited simultaneously, and spread about its roaring fire to the accompaniment of frightful crashes. This explosion which spread fear and terror far and wide lasted three or four minutes and appeared to us to be a signal for the beginning of the burning of the city which became so fatal for us. At first the fire remained visible only at this point, but after only a few minutes we already saw flames ascending in different districts of the city. We counted eighteen and various others soon followed.

At this sight we became quiet and looked at each other with amazement, every one seemed to be discovering in the countenance of someone else that he considered this occurrence an evil omen. Hereupon von Reinhardt, the cavalry captain, spoke up: "This is a bad business, auguring ill for the future. At one stroke it destroys the hope for peace which we need so badly. In this case it is not the annoyance and mischievousness of our troops which is at work, it is rather an indication of the great bitterness of our opponents, and a sacrifice that they are making to destroy us."

From the very beginning we saw this gruesome scene quite clearly, for our camp was higher than the city. Soon flames also arose in the parts of the city closer to us, illuminating us and the entire neighborhood so that as the light and flames increased, our courage, which had begun to revive, sank again, and in the midst of this bright light we looked into a future that appeared all the darker by contrast.

Midnight came, and the flames had spread to such an extent that they surged over the huge city like a sea of fire. The din in the city had grown louder, and now the number of stragglers and refugees coming from it who passed by our camp also increased.

Finally we grew tired of the terrible scene and lay down. After a short sleep we noticed that the flames had increased considerably, and with the break of day the frightful clouds of smoke, varied in color and form, became visible.

Thus, I had seen famous, ancient Moscow, the city of the Czars, on its last day, and also the beginning of the fire which was to destroy it and to bring about our downfall. Many of us were already dead, only half of those who had left the garrison on the Danube were still with us, and the condition of the other regiments of our division was similar. And yet, we were still proud, and full of vain hopes, and desires which we believed that the future would satisfy.

1766 — 1842

DOMINIQUE JEAN LARREY

A member of a family of well-known surgeons, Dominique Jean Larrey studied with Antoine Louis and the prominent surgeon Pierre Joseph Desault, and in 1787

had been a surgeon with the royal French navy in American waters. In 1792 he was attached to the Army of the Rhine as staff surgeon, several years later, he became a teacher at the Military School in Paris. Larrey took part in all the campaigns of the Republic and the Empire, and was surgeon-in-chief of Napoleon's Grand Army during the Russian campaign. To him is due the creation of the Flying Ambulance, the precursor of the modern quick treatment of the wounded.

The retreat that followed the burning of Moscow was a catastrophe for the Grand Army. Numbering over six hundred thousand, and drawn from increasingly younger French conscripts and from a dozen allied or subjugated nationalities, Napoleon's army was probably, up to that time, the largest ever assembled in Europe for a specific campaign. Its fate is well known. One of the elements that contributed to its destruction was the severe cold. Larrey, in his *Surgical Memoirs of the Campaigns of Russia, Germany, and France*, describes the action of the cold.

ON THE sixth, seventh, eighth, ninth and tenth of December, there was no bivouac in which several men were not left in a totally frozen state. Some perished even during the march. The periods that proved most fatal were, the days and nights of the eighth, ninth, thirteenth, fourteenth and fifteenth of December. It would be difficult to compute the exact number of dead bodies we observed between Miedneski and Wilna.

The death of these unfortunate victims was preceded by paleness of the countenance, by a kind of delirium, difficulty of speech, weakness of sight, and even entire loss of this sense. In this state some walked to a greater or less distance, supported by their comrades or their friends. Muscular power was sensibly diminished, and these persons staggered, like men under the influence of intoxicating liquors. Their debility progressively augmented until they fell prostrate, which was a certain evidence of the total extinction of life.

The uninterrupted and rapid march of the soldiers in a body obliged those that were incapable of keeping up with the progress of the troops, to quit the centre of the columns, in order to resort to the edges of the road, and proceed along its sides. Separated from this compact body, and abandoned to themselves, they soon lost their equilibrium, and fell in the ditches, filled with snow, from which they arose with difficulty. A painful numbness soon seized upon them, and lethargic drowsiness supervening, their sad existence was soon terminated. There frequently occurred, previously to death, an involuntary discharge of urine. In some instances, hæmorrhage took place from the nose, a circumstance that was particularly remarked by us on the heights of Miedneski, which appeared to me to be one of the most elevated points of Russia. I have grounds for believing that the barometer would have fallen considerably in this high situation. The exterior atmosphere having become rarefied, and the elevation of this region offering no resistance to the action of the fluids, the movements of which are supported by the internal vital powers and the expansion of animal heat, they escape at those points where they meet with the least resistance. It is commonly from the mucous

surfaces, and particularly that of the nasal membrane, in which the capillaries are very abundant and susceptible of prompt dilatation that these discharges take place

This death did not appear to me to be attended with much suffering The vital powers were gradually extinguished, and together with them the general sensibility was removed, and the perceptions of the sensitive faculties lost It is probable, that the heart was at last paralyzed, and all the vital organs arrested at the same time in the performance of their functions The fluids, already reduced in quantity by privations, and the absence of caloric, speedily coagulated We found nearly all of those, who perished under the continued influence of cold, lying on the abdomen Their bodies were stiff, their limbs inflexible, the skin discoloured, and without any appearance of a gangrenous spot (I have made known, in a Memoir on Mortification arising from Congelation, the immediate cause of this gangrenous affection Tome III *Campagnes d'Espagne*) Death generally supervened, more or less promptly, according as the individual had been subjected to abstinence for a longer or shorter period

1809 — 1892

PLINY EARLE

Pliny Earle, who has been referred to as the Nestor of American alienists, was born in Leicester, Massachusetts, a descendant of a Quaker family After attending the Leicester Academy and the Friends School at Providence, Rhode Island, he taught school for several years Earle then entered upon the study of medicine, receiving his medical degree from the University of Pennsylvania in 1837 He wrote his doctoral thesis on the subject of insanity, his interest allegedly having been drawn to mental illness by the death of a cousin who was a patient in a mental hospital Graduation was followed by a two-year visit of Europe, during which he saw the coronation of Queen Victoria, talked with Samuel Tuke, met the leading French psychiatrists in Paris, and visited mental institutions in several European countries

In 1840, after his return from Europe, Earle began his career as a psychiatrist by serving as resident physician at the Friends' Asylum at Frankford In 1844 he was appointed attending physician to the Bloomingdale Asylum in New York, where he instituted a strict regimen of manual work which he regarded as important for the treatment of mental illness Earle remained at Bloomingdale for five years Then followed another period of travel in Europe, especially in Germany and Austria, as a result of which he was able to present the best of the newer German psychiatry to American physicians During the Civil War, Earle spent two years in Washington at the Government Hospital for the Insane In his *Memoirs* he gives vivid pen-pictures of Washington in war time, and of the problems of military psychiatry From 1864 to 1885, he served as superintendent of the State Lunatic Hospital at Northampton, Massachusetts He died in 1892

The fame of Pliny Earle rests securely on his many and varied contributions

to psychiatry, but in particular in the field of statistics of mental illness. He was also one of the founders of the American Psychiatric Association, the American Medical Association, and of the New York Academy of Medicine.

A man of keen human interest, his observations on his fellow students at medical school throw into vivid relief the changes both educational and social that have occurred in the intervening century.

FEBRUARY 7—I was at the Capitol to-day, and heard the Senate debate a bill appropriating \$20,000,000 to assist Missouri in emancipating her slaves, who did not come under the effect of the President's emancipation proclamation of January 1. While I was in the House of Representatives, General Burnside appeared on the floor, and for awhile was the greatest Shaker in Washington, every one being eager to grasp his hand. After the representatives had done him this honor, the pages thronged about him with books and scraps of paper for his autograph. So great was the demand that he finally had to refuse, and departed. Last week Miss Dorothy Dix told me that there was very little sickness in the soldier's hospitals, of which she has general oversight, the patients being mostly convalescent, so that there was "nothing for the nurses to do."

February 22—But I have work enough to keep me out of mischief. This is my 39th day at the hospital, and, since I came, 45 men patients, 43 from the army and 2 from the navy, have been admitted,—insane patients, I mean, who all come under my care, and, being all recent cases of insanity, they make me much work. In all we have 190 insane patients, about 150 of them from the army. Many are Germans and Irishmen, 2 or 3 Italians, 1 Frenchman, and 1 Pole, the last a man with a enormous head, who speaks six languages. His brain is too powerful for his body. He is very insane, and will probably die. If our army is to be judged by some of the specimens that come to us, its physique is not in high condition, whatever its morals may be. Day before yesterday four men were brought in a squad, looking like Italian brigands, and very evidently belonging to the "great unwashed." To place the living beings they brought with them at 4,000 would be a low estimate. They were brought from the guard-house, which is an old slave-pen in Alexandria. From all I hear of that old Virginia town, it has become what some call a most God-forsaken place, reeking with filth and all the abominations of warfare. Steamboats run hourly from Washington thither. We get similar samples of soldiers from the regular Washington guard-house.

Our soldier-patients are from nearly every Northern State, from Maine to Kansas (which became a State two years ago, and is represented in the House by another Conway, Martin, not Moncure,—the latter now living at Concord). Coming, as they do, from various commands and many regiments, they can give us much news about war matters, in spite of their insanity. Then I make it a rule to talk with every one who recovers, as many do, and I follow

Captain Cuttle's rule of making a note of all that is noteworthy. Last evening I wrote the war history of an Irishman as he related it to me, who was pressed at New Orleans into the rebel service, fought against us at Big Bethel and Williamsburg, deserted, and got back to New Orleans, whence General Butler, then in command there, shipped him to Boston. He afterwards enlisted in a New York regiment. Two or three days ago I was talking with a man who has been nearly a year and a half in the Army of the Potomac. When I asked him if the soldiers liked General Hooker, he said, "Some do, but there are many who don't—there isn't one soldier in a dozen who likes an officer who rushes into a fight."

Miss Dix lunched with us a few days ago (we breakfast at eight, lunch at twelve, and dine at five). She says there is great mortality among the soldiers who were wounded at the battle of Murfreesboro, and thence brought to the hospitals at Alexandria and other places near Washington. They were carried (by the rebels) from Murfreesboro to Chattanooga, thence by way of Richmond to Norfolk or Fortress Monroe, and it was twenty-six days from the time they were wounded till their wounds were dressed. No wonder their mortality is great.

Religious services on the Sabbath have been held for a year past in the 14th of February. I consecrated it to that purpose, having an audience of 200 chapel, but, until I came, no secular lecture had been given there. On the persons gathered from the several departments of the hospital, and I also lectured on the 17th and 20th. I expect to continue this service twice a week while I remain here. It breaks the monotony of the hospital evenings, pleases many of the insane, makes the government of them easier, and increases their attachment to the person in general charge of them,—if he is also the lecturer. All the one-legged men who are well enough are in my audiences, and, as the chapel is in the third story and they walk with crutches up the forty-seven steps of the two flights of stairs, the noise they make is appalling to sensitive persons. It reminds me of the negro song,—

Sich a-gittin' upstairs I nebber did see

1836—1907

ERNST VON BERGMANN

Trained in the wars of 1866 and 1870-71, and particularly in the Russo-Turkish campaign of 1877-78, where he was consulting surgeon to the Imperial Russian Army of the Danube, Ernst von Bergmann was professor first at Dorpat, then at Wurzburg, and finally Langenbeck's successor in Berlin. Besides contributing significantly to neurosurgery, his greatest achievement was his development of, and emphasis on the maintenance of asepsis by physical means. The selection which follows describes his experience during the Russo-Turkish War.

FROM August 30th to September 3rd we had a great deal of hard work. It is not the individual operations that leave one so tired and exhausted in the evening, even if there were twenty-four amputations during the day. It is the examination of the wounded which can only be hasty, and yet must immediately determine whether a limb can be saved or must be sacrificed, whether a large vessel has been injured, or a bone broken. At the end of the day the result is a mental paralysis which is so profound that it will not even give way to sleep. Also there is no time for sleep, the work goes on at night. On the 30th, towards morning, we stopped for several hours, and after a short rest resumed our work. One does not work in the quiet of the clinical auditorium where every onlooker holds his breath when the amputation knife is in action, but surrounded by people who are moaning, groaning, lamenting, and screaming frightfully. Here a lightly wounded patient is swearing, there a dying man is praying, here the nurse wets the lips of a soldier with the death rattle in his throat, there a priest is singing the litany of extreme unction for the pale, bleeding man, and in the midst of all this the operating table! What a blessing, what a gift has chloroform given to mankind! For of all those who suffer here, the patient who is being operated is the quietest, he falls asleep rapidly and continues to sleep quietly and for a long time after the operation. We did not economize on chloroform, according to a rough estimate we used up far more than half a pood [a pood=36 pounds avoirdupois]. But I was able to see to it that chloroform was given regularly not only for the major operations, but also when a bullet was being extracted, and even when painful dressings were applied to broken legs. The little red caps were not knitted in vain for me, they were all used more than enough, and we did not have a single chloroform accident. Near our operating table I set up three separate work-places for setting in plaster extremities broken by gunshot wounds. These facilities were built from boxes and chests, and each was under the direction of a separate physician assisted by several of our nurses. In one spot the upper arms were set in plaster, at the second the knees, and at the third the thighs. From the operating table, where the students helped me, I was able to keep an eye on all three places, and to lend a hand when there were no operations. The arrangement and division of labor made it possible for us to provide the most essential primary treatment on the 30th and 31st for three thousand four hundred wounded. Since then I have seen again some of those that I "plastered," and had the pleasure to learn from them that the work was not in vain.

Even though our military medical facilities still leave much to be desired, particularly with regard to the crowding of our military hospitals, the inadequacies of our evacuation system, and the impossibility of separating the severely wounded from patients with internal ailments, owing to a lack of space, yet modern military medicine with its rapid provision of first aid to

the wounded is a decided improvement over the military medicine of earlier times. How many days passed before the first or even the slightest aid was provided for the wounded at Koniggratz!

1859 — 1930

ARTHUR CONAN DOYLE

The creator of Sherlock Holmes requires small introduction, but it is not widely known that he was originally a doctor. It was in 1887, while practicing as a doctor in Southsea, that Conan Doyle published *A Study in Scarlet*. In 1891 he attained immense popularity with the *Adventures of Sherlock Holmes*. Dr. Doyle was a voluminous writer and published numerous novels, plays, and several histories. During the Boer War, he was with the British forces at Bloemfontein. His account of medical conditions during the siege is a vivid, gripping picture of disease in war.

WE HAD been given the cricket field as our camp and the fine pavilion as our chief ward. Others were soon erected for we had plenty of tents—one each for our own use and a marquee for the mess. We were ready for any moderate strain, but that which was put upon us was altogether beyond our strength and for a month we had a rather awful time. The first intimation of trouble came to me in a simple and dramatic way. We had a bath in the pavilion and I had gone up to it and turned the tap, but not a drop of water appeared, though it had been running freely the night before. This small incident was the first intimation that the Boers had cut the water supply of the town, which caused us to fall back upon the old wells, which in turn gave rise to an outbreak of enteric which cost us 5,000 lives. The one great blot in Lord Roberts' otherwise splendid handling of the campaign was, in my opinion, that he did not buzz out at once with every man he could raise, and relieve the water-works, which were only 20 miles away. Instead of this he waited for his army to recuperate, and so exposed them to the epidemic. However, it is always easy to be wise after the event.

The outbreak was a terrible one. It was softened down for public consumption and the press messages were heavily censored, but we lived in the midst of death—and death in its vilest, filthiest form. Our accommodation was for fifty patients, but 120 were precipitated upon us, and the floor was littered between the beds with sick and often dying men. Our linen and utensils were never calculated for such a number, and as the nature of the disease causes constant pollution, and this pollution of the most dangerous character and with the vilest effluvia, one can imagine how dreadful was the situation. The worst surgical ward after a battle would be a clean place compared to that pavilion. At one end was a stage with the scene set for "H M S Pinafore." This was turned into latrines for those who could stagger so far. The rest

did the best they could, and we did the best we could in turn. But a Verest-schagin would have found a subject in that awful ward, with the rows of emaciated men, and the silly childish stage looking down upon it all. In the very worst of it two nursing sisters appeared among us, and never shall I forget what angels of light they appeared, or how they nursed those poor boys, swaddling them like babies and meeting every want with gentle courage. Thank God, they both came through safe.

Four weeks may seem a short time in comfort, but it is a very long one under conditions such as those, amid horrible sights and sounds and smells, while a haze of flies spreads over everything, covering your food and trying to force themselves into your mouth—every one of them a focus of disease. It was bad enough when we had a full staff, but soon the men began to wilt under the strain. They were nearly all from the Lancashire cotton mills, little, ill-nourished fellows but with a great spirit. Of the fifteen, twelve contracted the disease and added to the labours of the survivors. Three died. Fortunately we of the staff were able to keep going, and we were reinforced by a Dr Schwartz of Capetown. The pressure was great, but we were helped by the thought that the greater the work the more we proved the necessity of our presence in Africa. Above all, our labours were lightened by the splendid stuff that we had for patients. It was really glorious to see the steady patience with which they bore their sufferings. The British soldier may grouse in days of peace, but I never heard a murmur when he was faced with this loathsome death.

Our hospital was no worse off than the others, and as there were many of them the general condition of the town was very bad. Coffins were out of the question, and the men were lowered in their brown blankets into shallow graves at the average rate of sixty a day. A sickening smell came from the stricken town. Once when I had ridden out to get an hour or two of change, and was at least 6 miles from the town the wind changed and the smell was all around me. You could smell Bloemfontein long before you could see it. Even now if I felt that low deathly smell, compounded of disease and disinfectants, my heart would sink within me.

At last there came the turn. The army had moved on. Hospitals up the line absorbed some of the cases. Above all the water-works had been retaken, and with hardly any resistance. I went out with the force which was to retake it, and slept for the night in a thin coat under a wagon, an experience which left me colder than I can ever remember being in my life—a cold which was not only on the surface, but like some solid thing within you. Next morning there was every prospect of a battle, for we had been shelled the night before and it looked as if the position would be held, so Ian Hamilton, who commanded, made a careful advance. However, there was no resistance, and save for some figures watching us from distant hills there was no sign of the enemy. He had slipped away in the night.

Charles Gibbs is still in practice and senior surgeon of Charing Cross Hospital, but he will forgive me if I remind him that his pupil did once score over him. One of my enteric patients was obviously dying and kept murmuring that he would like some solid food. Of course the first law in treating enteric is, or was, that diet must be fluid, as the intestine is ulcerated and puncture of it means death by peritonitis. I said to Gibbs "Do you consider that this man is sure to die?" "He is certainly as bad as he can be," said Gibbs, "Well then," said I, "I propose to give him a solid meal." Gibbs shook his head and was shocked. "It is a great responsibility you take." "What's the odds," I asked, "if he has to die anyhow?" "Well, it's just the difference whether you kill him or the disease does." "Well, I'll take the chance," said I—and I did so. A year or so later I was attending a public meeting at Edinburgh when the following letter, which I copy from my book of curiosities, was handed up to me.

128 Royal Road
Kennington Park
London, S E

October 1, 1900

Sir,—

As one who was under your care at Bloemfontein in "Langman's Hospital" I hope you will forgive me in taking the liberty of wishing you success at Edinburgh. I am actuated in this not only by political principles but by the fact that I (and others) owe my life to your kindness and care. You may not remember me, Sir, but I can assure you the remembrance of you is written in my mind and can never be removed. Again wishing you success and hoping you will pardon this liberty

I remain, Sir,

Yours obediently

(Pte) M Hanlon, C I V

Mr Hanlon was my enteric patient and he had never looked back from the day he had that square meal. But I don't say it was an example for the family practitioner to copy.

1870—

HUGH HAMPTON YOUNG

Dr Young is an outstanding American urologist. He has contributed greatly to the development of urologic surgery as a medical specialty in the United States. During World War I, he was Director of the Division of Urology, A E F. The problem of venereal disease is extremely important in military medicine. A graphic illustration of this statement is contained in Dr Young's account of the venereal disease problem at St Nazaire and what was done about it.

THE First and Second Divisions of the A E F—old regulars—had arrived in France and were quickly transported to the training areas near the front.

Stringent methods of prophylaxis had been instituted, and the venereal disease in these two divisions, each of nearly thirty thousand men, fell to forty per thousand. The venereal rate in the regular army in the United States was about ninety new cases per thousand men per year. The rate was figured out daily in the entire A E F from telegraphic reports, which all organizations were required to send to General Headquarters.

General Pershing told me that on top of the papers awaiting him at his office each morning was the venereal report of the various organizations, and this was the first thing he considered. He compared this with the report for the previous day, and if he found a marked increase in the rate in any organization, he immediately called upon the Chief Surgeon A E F to investigate it.

On November 9 I was notified that the venereal rate suddenly had jumped to two hundred as a result of great infection among newly arrived troops at the point of debarkation—Saint-Nazaire—and that General Pershing had ordered me to go there at once to investigate and report.

I found that port facilities at Saint-Nazaire were so inadequate that shiploads of men were kept on board ten days or more before debarking. Shore leave was granted daily to about 20 per cent of these men. Liberated in this tough seaport, they behaved just as other vigorous youngsters would after having been penned up for weeks while their ships zigzagged to avoid the U-boats.

The grogshops did a tremendous business. The liquors principally dispensed were West Indian rum and a poisonous drink known as Niger gin. It didn't take much of this rotgut stuff to inflame passions and obliterate all repressions. Next came a mass movement to the houses of prostitution. There were six of these *maisons de prostitution* in Saint-Nazaire. They were small, and housed only five or six girls each. The situation within was terrible. The line of soldiers awaiting their turn extended along the narrow hall to the individual doorways. The fearful business went on from hour to hour while the "madame" grinned in satisfaction at the great money-making prowess of her girls. One proudly told me that the most active girl had taken care of sixty-five the day before, and that the average was between forty and fifty per day. "But how can they stand such a terrific experience?" "Oh, monsieur, they wear out in about four weeks. We ship them off to less popular joints, and before long they are completely used up and become streetwalkers."

Why did not prophylaxis prevent infection from these sources? Those soldiers from the ships, on their return, found them so crowded that few received prophylaxis. Those from the camp were frequently so drunk that they could not make the distance on foot and often fell by the wayside, where they were picked up and placed in trucks like rows of sardines and delivered en masse to the camps. When asked whether they had been exposed, the inebriated could give no intelligent reply, and often when the Medical Corps attempted to give prophylaxis forcibly they had a fight on their hands.

The happenings in this nasty, crowded seaport were the most disgraceful in the history of the A E F I visited the commanding officers of the Medical Corps and the base port hospital They were so overwhelmed that they had almost given up The inmates of these houses of prostitution had been subjected to weekly examinations by French medical officers detailed for the purpose They were far more scientific than the civic employees I had seen in Paris The women we saw did not seem to be infected, but I had evidence that eight cases of syphilis had occurred among our soldiers from contacts made in one of the houses Re-examination showed that none of these women had active signs of syphilis Where did the infections come from? Investigation showed that tending the front door was a French boy of sixteen He was the pet of one of the women, and she had had syphilis, and was no longer in an infectious stage She could not acquire a new infection, but the germs deposited by her boy lover remained there to infect the American soldiers who passed through her room From this one woman eight of our men had acquired syphilis in a single day

It was apparent that the danger of regulated prostitution was not entirely from the diseases of the women themselves, but also from the fact that by receiving one individual after another without any douching or even arising from their beds, these women came to possess "septic tanks" filled with almost every type of venereal infection

I hastened back to General Headquarters and prepared a voluminous report I had scarcely finished it when I received a telephone communication from the office of General Pershing, he wished to see my report immediately The General was leaving for Paris, and asked me to accompany him Closeted with me in his private car, General Pershing went carefully through my report and asked searching questions "Major," he said, "this is one of the most disgraceful things that has happened to the American Army Drastic measures must be taken immediately I have agreed to meet the chiefs of the Allied armies in Paris, but this is more important, and I shall take the earliest train to Saint-Nazaire and put into effect your recommendations"

The General's visit to Saint-Nazaire is well remembered in the army Like an enraged bull he confronted the headquarters staff, the medical officers, the military police, all who were concerned With every detail of my report in his mind, he confronted them with their dereliction of duty and their neglect of army regulations He ordered more rapid evacuation of troops, the stagnation in camp was to end, the transports were to be disembarked as soon as they arrived, houses of prostitution were to be surrounded by military police and rigorously put out of bounds, the saloons were to be treated likewise, prophylaxis was to be rigidly enforced with all troops, both permanent and transient

A veritable transformation occurred Never again did such disgraceful happenings occur in Saint-Nazaire, or any other seaport The venereal-

disease rate, which had skyrocketed to disgraceful heights, fell rapidly to the previous low rate

After General Pershing's visit to Saint-Nazaire, I was requested to prepare a general order incorporating the suggestions made in our report. With assistance I prepared the essentials of an order, which were elaborated and issued by General Pershing as General Order 77, the most drastic and far-reaching health order ever issued to an army.

1869 — 1939

HARVEY CUSHING

From May 1917 to March 1919, Harvey Cushing was Director of USA Base Hospital No. 5 attached to the British Expeditionary Force. In 1918, he was consultant in neurological surgery to the AEF. Cushing's war volume, *From a Surgeon's Journal, 1915-1918* contains the following account of some of the work carried on at Base Hospital No. 5.

Among the many promising young men who lost their lives in World War I was Revere, the only son of Sir William Osler. Harvey Cushing was asked to see him after he was wounded, and in his journal presents a poignant and affecting account of the incident.

Tuesday, April 27, 1915

WHEN after lunch another operation on the man we had X-rayed yesterday disclosing a foreign body about 5 cm. in and forward from a small defect at a *plaque d'entrée* in the cranial vault, which had been promptly trephined at a *poste de secours*.

There were a lot of in-driven bone fragments evidently infected, and at the bottom of the track the fragment of shell or whatever it was could be detected, but it would have taken a lot of manipulation with consequent damage to the brain to get it out. So we packed up and lugged the man down three flights to the first floor, where Chaveau happened to be operating, and there I tried the famous magnet. I missed the fragment the first time and feared that after all it was lead and a piece of shrapnel ball—but on the second try, out it came, hanging to the end of the large probe. It was the more satisfactory, because they have had little or no success heretofore with the extraction of missiles from the brain in this manner.

Wednesday, April 28

Still very busy and the hospital is crowded. I had a strange time operating for du Bouchet on one of his patients—Lafourcade in No. 77—supposed to have a *gouttière* bullet wound of the skull, which I did not question, though murmuring something about the desirability of an X-ray.

At all events, I was persuaded to take the case in hand and it proved to be not a gutter wound at all, the presumed wound of exit being merely where

the man had fallen and cut his head on some sharp object. The track of the missile, along which an aluminum probe could be passed, led directly downward toward the base of the brain. This afternoon an X-ray showed a fragment of *obus* just over the sella—not a bullet at all.

Thursday, April 29

Several unsuccessful trials this morning to extract the shell fragment by the aid of the magnet from the brain of poor Lafourcade. I was afraid to use the huge probe which they have and so determined to make, or have made, another—of which later. We had tried every possible thing in our own cabinet and in those on the lower floors without success. Finally, while I was at lunch, Boothby hit upon precisely what was needed in the shape of a large wire nail about six inches long, the point of which he had carefully rounded off.

Well, there was the usual crowd in the X-ray room and approaching corridor, and much excitement when we let the nail slide by gravity into the central mechanism of smiling Lafourcade, for at no time did he have any pressure symptoms, and all of these procedures were, of course, without an anesthetic. While the X-ray plate was being developed to see whether the nail and missile were in contact, who should drop in but Albert Kocher, with a friend from Berne, and then shortly a card was sent in by Tom Perry's friend, Salomon Reinach, *Membre de l'Institut*, author of the *History of Religions* and much else.

So all together we finally tramped into the first-floor operating room, where Cutler mightily brings up the magnet and slowly we extract the nail—and—there was nothing on it! Suppressed sighs and groans. I tried again, very carefully—with the same result. More sighs, and people began to go out. A third time—nothing. By this time I began to grumble. "Never saw anything of this kind pulled off with such a crowd. Hoodooed ourselves from the start. Should have had an X-ray made when the man first entered the hospital." The usual thing, as when one begins to scold his golfball.

I had taken off my gloves and put the nail down, but then—let's try just once more! So I slipped the brutal thing again down the track, $3\frac{1}{2}$ inches to the base of the brain, and again Cutler gingerly swung the big magnet down and made contact. The current was switched on and as before we slowly drew out the nail—and there it was, the little fragment of rough steel hanging on to its tip! Much emotion on all sides—especially on the part of A. Kocher and Salomon Reinach, both of whom could hardly bear it.

Thursday, August 30, 1917

Last Sunday came a letter from Lady Osler telling me that Revere was somewhere near St. Julien and how dreadful it would be should he be brought in to me with a head wound, and yet how thankful they would be. I answered immediately, asking her to wire me the number of his unit so that I could

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try and locate him among the millions. Rather used up, I was preparing to turn in at 10 last night, when came this shocking message "Sir Wm Osler's son seriously wounded at 47 CCS. Can Major Cushing come immediately?" The C.O. let me have an ambulance, and in a pouring rain we reached Dosinghem in about half an hour. It could not have been much worse, though there was a bare chance—one traversing through the upper abdomen, another penetrating the chest just above the heart, two others in the thigh, fortunately without a fracture.

The local C.O. would not let me cable, and I finally insisted on phoning G.H.Q.—got General Macpherson on the wire and persuaded him to send to Oxford via the London War Office. "Revere seriously wounded, not hopelessly, conscious, comfortable."

Crile came over from Rémy with Eisenbrey, and after a transfusion, Darach, assisted by Brewer, opened the abdomen about midnight. There had been bleeding from two holes—in the upper colon and the mesenteric vessels. His condition remained unaltered, and about seven this morning the world lost this fine boy, as it does many others every day.

We saw him buried in the early morning. A soggy Flanders field beside a little oak grove to the rear of the Dosinghem group—an overcast, windy, autumnal day—the long rows of simple wooden crosses—the new ditches half full of water being dug by Chinese coolies wearing tin helmets—the boy wrapped in an army blanket and covered by a weather-worn Union Jack, carried on their shoulders by four slipping stretcher-bearers. A strange scene—the great-great-grandson of Paul Revere under a British flag, and awaiting him a group of some six or eight American Army medical officers—saddened with the thoughts of his father. Happily it was fairly dry at this end of the trench, and some green branches were thrown in for him to lie on. The Padre recited the usual service—the bugler gave the "Last Post"—and we went about our duties. Plot 4, Row F.

1849 — 1919

WILLIAM OSLER

The name of Sir William Osler is too well known to require a long introduction. First Professor of Medicine at the Johns Hopkins Medical School, medical historian and bibliophile, he exerted a stimulating influence on medicine in this country. During the period at Hopkins was born his great textbook, *The Principles and Practice of Medicine*. His life has been well described in the late Harvey Cushing's *Life of William Osler* (1925). In it Cushing relates how he received the news of his son's death, and his reaction to this blow.

AT 4.15 p.m. as he noted in his accountbook among the consultations and engagements, London, Folkestone, Cliveden, Torquay, Paignton, Cardiff, &c.—

the dreaded message came. One may hope "the seen arrow slackened its flight." And, possibly, late that night he made this entry:

"I was sitting in my library working on the new edition of my text-book when a telegram was brought in, 'Revere dangerously wounded, comfortable and conscious, conditions not hopeless.' I knew this was the end. We had expected it. The Fates do not allow the good fortune that has followed me to go with me to the grave—call no man happy till he dies. The War Office telegraphed at 9 in the evening that he was dead. A sweeter laddie never lived, with a gentle loving nature. He had developed a rare taste in literature and was devoted to all my old friends in the spirit—Plutarch, Montaigne, Browne, Fuller, and above all Isaac Walton, whose *Compleat Angler* he knew by heart and whose 'Lives' he loved. We are heart broken, but thankful to have the precious memory of his loving life."

He began that very night to shield others—his wife, his friends, the medical officers whose efforts to save the boy had been futile. "Poor Grace! it hits her hard, but we are both going to be brave & take up what is left of life as though he were with us." Notes, telegrams, cables expressing grief and sympathy, of course poured in—chiefly from his countless American friends. The English in those days sorrowed in silence for one another. It was too common a story—one merely mentioned these things in an off-hand way.

"Dear Mac Alister. So glad to hear that you are better. Harrogate is a great place for the *Primum vix ductus vixit*. I will write to the G. A. Hard blow to-day. News of the death of my boy in France. Fortunately his great friend was at the C. C. S. when he was brought in. He was a great lover of books and a son after my own heart. Yours sincerely W. O."

1881—

PHILIP GOSSE

Philip Gosse has had a varied career and been active in many fields besides medicine. After preliminary schooling, he was sent to a farming-school at the age of sixteen. From there he went as a naturalist with the Fitzgerald Expedition to the Andes to collect animals.

Later, Dr. Gosse studied medicine at St. Bartholomew's, and was a country doctor until the outbreak of World War I. After that, he was on the staff of the Radium Institute in London. At the age of fifty he gave up medicine, married, and started life all over again. He went to live in Sussex, where he wrote about pirates and birds, and wrote several biographies.

In 1941 Dr. Gosse made still another fresh start in his life by having whooping cough and matriculating at Cambridge University.

The activities of medical officers in wartime are not necessarily connected with the treatment of sick or wounded soldiers. Some doctors may be given jobs, which

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The local C O would not let me cable, and I finally insisted on phoning G H Q—got General Macpherson on the wire and persuaded him to send to Oxford via the London War Office "Revere seriously wounded not hopelessly, conscious comfortable."

Crile came over from Rémy with Eisenbrey, and after a transfusion, Darrach, assisted by Brewer, opened the abdomen about midnight. There had been bleeding from two holes—in the upper colon and the mesenteric vessels. His condition remained unaltered, and about seven this morning the world lost this fine boy, as it does many others every day.

We saw him buried in the early morning. A soggy Flanders field beside a little oak grove to the rear of the Dosinghem group—an overcast, windy, autumnal day—the long rows of simple wooden crosses—the new ditches half full of water being dug by Chinese coolies wearing tin helmets—the boy wrapped in an army blanket and covered by a weather-worn Union Jack, carried on their shoulders by four slipping stretcher-bearers. A strange scene—the great-great-grandson of Paul Revere under a British flag, and awaiting him a group of some six or eight American Army medical officers—saddened with the thoughts of his father. Happily it was fairly dry at this end of the trench, and some green branches were thrown in for him to lie on. The Padre recited the usual service—the bugler gave the "Last Post"—and we went about our duties. Plot 4, Row F.

1849 — 1919

WILLIAM OSLER

The name of Sir William Osler is too well known to require a long introduction. First Professor of Medicine at the Johns Hopkins Medical School, medical historian and bibliophile, he exerted a stimulating influence on medicine in this country. During the period at Hopkins was born his great textbook, *The Principles and Practice of Medicine*. His life has been well described in the late Harvey Cushing's *Life of William Osler* (1925). In it Cushing relates how he received the news of his son's death, and his reaction to this blow.

AT 4.15 p.m. as he noted in his accountbook among the consultations and engagements, London, Folkestone, Cliveden, Torquay, Paignton, Cardiff, &c—

the dreaded message came One my hope "the seen arrow slackened its flight" And, possibly, late that night he made this entry

"I was sitting in my library working on the new edition of my text-book when a telegram was brought in, 'Revere dangerously wounded, comfortable and conscious, conditions not hopeless' I knew this was the end We had expected it The Fates do not allow the good fortune that has followed me to go with me to the grave—call no man happy till he dies The War Office telegraphed at 9 in the evening that he was dead A sweeter laddie never lived, with a gentle loving nature He had developed a rare taste in literature and was devoted to all my old friends in the spirit—Plutarch, Montaigne, Browne, Fuller, and above all Izak Walton, whose *Compleat Angler* he knew by heart and whose 'Lives' he loved We are heart broken, but thankful to have the precious memory of his loving life"

He began that very night to shield others—his wife, his friends, the medical officers whose efforts to save the boy had been futile "Poor Grace' it hits her hard, but we are both going to be brave & take up what is left of life as though he were with us" Notes, telegrams, cables expressing grief and sympathy, of course poured in—chiefly from his countless American friends The English in those days sorrowed in silence for one another It was too common a story—one merely mentioned these things in an off-hand way

"Dear MacAlister, So glad to hear that you are better Harrogate is a great place for the *Primæ viæ ductus vitæ* I will write to the G A Hard blow to-day News of the death of my boy in France Fortunately his great friend was at the CCS when he was brought in He was a great lover of books and a son after my own heart Yours sincerely W O"

1881—

PHILIP GOSSE

Philip Gosse has had a varied career and been active in many fields besides medicine After preliminary schooling, he was sent to a farming-school at the age of sixteen From there he went as a naturalist with the Fitzgerald Expedition to the Andes to collect animals

Later, Dr Gosse studied medicine at St Bartholomew's, and was a country doctor until the outbreak of World War I After that, he was on the staff of the Radium Institute in London At the age of fifty he gave up medicine, married, and started life all over again He went to live in Sussex, where he wrote about pirates and birds, and wrote several biographies

In 1941 Dr Gosse made still another fresh start in his life by having whooping cough and matriculating at Cambridge University

The activities of medical officers in wartime are not necessarily connected with the treatment of sick or wounded soldiers Some doctors may be given jobs, which

have medical significance, but do not involve any direct relation to the persons whose health is being protected. Such was the experience of Philip Gosse, who became Rat Officer to the Second British Army.

AFTER every spell at either of the advanced dressing-stations we spent a week or ten days at the rest camp, which stood beside a farmhouse across the river between Erquingham and Steenwerck. I never read Mr. Mottram's masterpiece without recalling that farm which might have been the original of his Spanish farm.

It was a single-storied, red-brick building, had the same old thatch, the same midden of steaming dung in the courtyard, the odour of which filled every room. Mr. Vanderlynden owned the farm, though under another Flemish name, and Mrs. Vanderlynden was still alive and very active, and as efficient as was Madeleine to cope with British quartermasters and billeting officers. Here one was one's own master, got up in the morning when one felt inclined, and did just what one liked. After breakfast—an English breakfast of fried eggs and bacon,—I would go out to parade my small army of sixty men. Then the men's billets were inspected as well as the horse-lines with its thirty-odd horses, and the A S C grooms and drivers. After the short duties of the day were over I could settle down to what, I fear, interested me a good deal more than inspecting soldiers' kits or going on route marches.

It was the sight of McKerrow skinning a vole that prompted me to write a letter to my old friend, Oldfield Thomas, the Keeper of Mammals in the Natural History Museum in Cromwell Road, to ask him if the Museum was well provided with specimens of the small mammals of Flanders, and if not, whether he would like me to procure some. Thomas, who was always ready to encourage amateurs to collect, wrote back to say that they were in great need of specimens from Western Europe, and he sent also some of the museum labels and some arsenical soap for preserving the skins. I then asked my mother to send me a dozen "break-back" mousetraps, and as soon as they arrived I set about collecting and skinning mice and shrews.

The lack of skinning instruments was easily solved by my purloining the ambulance chiropody outfit, a magnificent set of instruments, scalpels, forceps, etc., fitted into a brass-bound box, which was never used for its legitimate purpose, and which is still in my care.

The daily life of an M O to a battalion or a field ambulance consisted of quiet periods varied by occasional bursts of work, when fighting was on, which might keep you hard at work for a few hours, or for one or two whole days and nights in a big "strafe," without sleep or rest. When out of the trenches in reserve or in the back areas, where the division went from time to time, it was different, if your interests lay in wild life or country pursuits. Of course, this did not apply to combatant regimental officers, for them there was always plenty to be done, fortunately, perhaps, for their stability of mind. When in the trenches, after the short sick parade and the inspection of a

latrine or two the regimental M O had a long day before him with but little to do except smoke, read, or play patience.

My collecting always kept me busy.

In the evening I would go out with my haversack full of traps and a piece of ration cheese for bait. Creeping about in the wet ditches and hedgerows, I would look out for the tiny beaten tracks of my small jungle game—wood-mice, voles, or shrews. Setting traps for even such small game as this calls for a certain amount of skill, or at least, hedge-cunning, for a dozen traps placed anyhow and anywhere will catch nothing. As each trap was set, a small piece of cotton wool was fixed to some bramble or twig close by to help locate it the following day, otherwise it would be lost. Then first thing next morning I would be off again, and would start my traps and taking them up.

Of course there were bitter days of disappointment, as in every other branch of field or blood sport. But then again there were red-letter days, when in one of your carefully set and baited traps you discover some small animal the like of which you had never seen before.

On returning to the diggings, each specimen was carefully examined and measured. These measurements had to be written on the labels and recorded in millimeters: the length from point of nose to tip of tail, the length of tail which must not include any hair at the tip, and the length of the ears and paws. Then the place where the specimen was caught, the date, and its sex, had to be noted down. On the back of the label I would put down anything I thought worth while, such as the position of the trap when set, in a hollow willow-tree, for instance, or a favorite spot for penny shrews—or the edge of a dyke, a hole in a wall, or under a haycock. Perhaps the best would be noted down in the case of a rare creature which had fallen to the temptation of some other lure than ration cheese, such as bread, almonds, or raw apple. The label being completed, out came the chloroform, and the actual skinning began. To make a good skin of a small animal, such as a mouse, is not such a simple and easy matter as it may sound. The most difficult part, and the one which required greater patience and precision, is to remove the bone out of a mouse's tail, and insert in its place a long thin wire, on which cotton wool has been spun gradually tapering in thickness to the tip, to correspond exactly with the bone which has been withdrawn.

When this had been done, and the mouse stuffed with army cotton wool and the skins sewn up with needle and thread, it had to be pinned out on a board to dry and the label attached to the off hind leg. It all sounds very easy, but taxidermy, even the skinning of mice, is quite an art, or certainly a craft of no mean order.

This hunting of small mammals was all very well in the back areas, miles away from the line, but in or just behind the trenches the risks were not only on the side of the small mammals. Sometimes the hunter became the hunted. Well-intentioned sentries and other armed patriots, seeing a suspicious person—dressed—more or less—in the uniform of a British officer, skulking in

waste places, or creeping about in water-logged ditches, were apt to jump to the conclusion that he was an enemy spy. When challenged I found that the simple truth that I was only setting traps for field mice, failed, in most cases, to allay suspicion and on one occasion I was hurried, under an armed guard, to explain my suspicious actions to higher authorities.

When the division went into "rest" somewhat well away behind the line it was the business of my batman, Bob Church, to make enquiries in the neighbourhood if any corn stacks were being threshed. On discovering one he and I would go off, and after explaining to the astonished but always polite farmer what we were after, would join in the threshing, and as the last of the stooks were being lifted and there was a general stampede of small game in all directions, we would dash into the arena, coatless, and armed with sticks, many a fine specimen now enjoying embalmed immortality in the British Museum was procured at one of these battues.

One cold, wet, winter's day the ambulance packed up and, at the rear of the division, marched away from the enemy, the tumult and the mud of the Salient, in the direction of Cassel. Late in the afternoon we arrived at the village of Steenvoorde, where we were to be billeted. Bob Church, whom I had sent on ahead, had managed to get me a bedroom at the house of some old friends of mine, Monsieur and Madame Schatt. I had often been billeted on them before. Their house stood in the main street, and their two charming daughters ran one of those amateur shops which were so popular with British officers, where all sorts of trifles from electric torches to scented soap could be purchased at double their proper price.

As a friend of the family I was given the best spare bedroom with the unwonted luxury of sheets in the bed. Rain and sleet were beating on the window when I woke up next morning, so I decided as there was no work to be done, to make the most of the sheets, and spend a day in bed. I told Bob if anyone enquired for me to say I was in bed with a bad cold and could not be disturbed.

The morning was passing very comfortably, as I lay between the sheets, smoking and reading, when all of a sudden I became aware of a disturbance outside my room, of loud voices expostulating. A moment later the door was flung open and in strode a small but fierce-looking officer. His cap shoved him to be a staff officer of some kind, but as he was wearing a long waterproof coat over his tunic, I could not tell his rank. Now in the army the manner in which a conversation takes place between any two officers largely depends on the relative rank of the speakers. Thus it was I found myself in some difficulty. But the small staff officer quickly came to the point, for after glancing at a paper in his hand he demanded, "Are you Captain P H G Gosse?"

"Yes," I admitted, though wondering whatever it was all about.

"Well," continued the staff officer, "am I right in understanding you know all about rats?"

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"Yes," I admitted, though wondering whatever it was all about.

"Well," continued the staff officer, "am I right in understanding you know all about rats?"

Now that, I thought, is a strange question to be asked by a total stranger, still more so when you are lying in bed. I wondered what was at the back of it, and whether it might lead to some nice quiet job, or if I was to be court-martialed for a pastime so unbecoming an officer and a gentleman as skinning mice. Like everybody else who had been in the line for any length of time, excepting those rare and to-be-envied blood-lust soldiers who enjoyed the war, I was all for a safe and cushy post if such was offered me.

But this odd question "You know all about rats?" No. I wanted to learn a little more before giving a definite answer. So to gain time I replied, "Well, I know a good deal about birds."

"That's excellent," said he, "You are appointed Rat Officer to the Second Army, and will report forthwith to the Director of Medical Services to the Second Army at Hazebrouck," whereupon without waiting for any further observation from me or bidding me farewell, or even expressing any interest in my bad cold, the fierce one right-about turned and marched out of the room.

"So here is a pretty how-d'ye-do," I thought as I lay back again between my warm sheets.

My meditations, however, were soon interrupted by the return of Bob Church, to whom I described what had happened during his absence and asked him what he thought about it all.

"Think about it?" said Bob. "Don't you waste no time, Sir, thinking! we've got a cushy job, and mustn't miss it," whereupon, without another word, my batman fell upon his knees and began with feverish haste to pack my valise, folding camp bed, washstand and armchair and of course the precious specimens, traps and skinning instruments.

In no time we were off in a borrowed motor ambulance to Hazebrouck, where I reported my arrival at Headquarters and was introduced by the fierce one—he proved to be a temporary Major R A M C—to General Porter, the D M S, who formally appointed me Rat Officer to the Second Army. The appointment was to be a temporary one and an experiment, and would not carry with it any promotion in rank nor any emoluments.

He told me that instructions had reached him from higher up to find a suitable officer for the post and that having heard of my activities—that was the word he used, which was accompanied by what looked uncommonly like a wink—he thought I ought to do.

A very pleasant and interesting post it proved to be, while it lasted. First of all there was no precedent to be followed, and King's Regulations contained no mention even of a rat officer, what he should or should not do. This was most encouraging, since almost every form of military initiative appeared to me to be hampered by some rule or formula in King's Regulations.

For more than two years people like myself had been pulled up by King's Regulations, and arguments with quartermasters had always ended by the

old hand producing a copy of King's Regulations and finding something there with which to confound one

Now I had a clear field to work in, with no rules, regulations or precedents. To begin with I was told to draw up a general scheme to show what damage rats did and whether they were a possible source of danger to the health of the army, and to offer suggestions for dealing with the plague of rats which swarmed in and behind the trenches

Having got my instructions from the D M S, my batman and I settled down at Hazebrouck in some comfortable billets with a French family, and I got permission to have my meals with them, instead of messing with one of the headquarters staff

I now sat down to write a learned treatise on the natural history of the Brown Rat—*Epimys norvegicus*—going fully into its habits and marriage customs, and dwelling on the enormous destruction it did to army food as well as army equipment

I also dealt, but not at such length, with the Black Rat—*Epimys rattus*—and pointed out how it might become a carrier of Bubonic plague

I then proceeded to draw up, but not in detail, several schemes for destroying rats, by poison, by gas and by traps. In theory I slaughtered rats in their thousands and their hundreds of thousands

I ended my report by pointing out that all methods for the extinction of rats would fail if at the same time proper measures were not taken to prevent the rats getting at food, which I advised should be done by keeping all eatables, whether in bulk, or only in small quantities as in dug-outs, in rat-proof cages or cupboards

When this great treatise was completed to my satisfaction I laid it, not without some feeling of pride, before the General and retired to await his verdict. A few days afterwards I was sent for and informed that my report had been read at headquarters and, with the exception of one part, approved of

The part objected to was the proposed plan to exterminate the rats by means of poisoned food, which was considered a possible danger to the troops. I was now told to draw up another scheme for a big campaign against rats in the whole of the Second Army area by means of traps and to give exact details how the traps should be used and by whom. This was a pretty large order, but nothing daunted, I applied for leave to proceed—one always proceeded, never went—to Paris, in order to consult with the French army authorities and learn what they were doing about the rat menace. I had read an article in the *Morning Post* written by Mr H Warner Allen, the representative of the British Press with the French Army, in which it was stated that in one army corps a reward of one sou was offered for each dead rat brought in from the trenches, and that in one fortnight 8,000 rats were killed and the rewards claimed

This plausible proposal for a liaison visit to Paris was at once turned down, and the next best I could obtain was the use of a car to take me to the Base

to interview the Head of all the Quartermasters about supplying the particular type of rat trap I recommended should be used

It was a pleasant drive from Hazebrouck through Hesdin to the coast. What first struck me when I arrived at the outer office of this high official was the brave display of war decorations. Every military clerk seemed to be wearing at least one ribbon on his tunic. The sergeants had all won the D C M and M M with a pretty spattering of French, and Belgian ribbons. Most of the corporals wore a military medal, and some a foreign decoration as well. How brave and how clean they all looked after the unclean, undecorated men I had lived amongst for the last two years, where an occasional Military Medal or even rarer Distinguished Conduct Medal was a thing to notice and admire.

Having at length broken through this barrage of heroes, I was ushered into the Presence, and stood at attention before the great man himself. After the usual frigid reception—I was getting used to being greeted in this manner and was no longer intimidated by it—I explained my business, and soon found him to be a most pleasant and intelligent man. I put before him the pros and cons for the type of trap I thought best, and he promised to let me have—I forget how many thousands—of the sort I wanted, and I returned triumphantly to Hazebrouck.

This habit of the Great I have just referred to, of receiving junior officers as though they were the very dregs of society or had just been detected committing some foul crime, I found very disconcerting, indeed terrifying when I first experienced it. But gradually I discovered that most of the Great, and all the less great, began in that way and that really it meant nothing at all, for more often than not they would soon be cracking jokes or at least being quite polite. The secret of success lay in refusing to be bullied, and it was from a big-game hunter who ran a school of sniping at Mont des Cats that I learned the secret. His advice to me was to treat a General, a Brigadier, or a full Colonel exactly as you would a lion or any other fierce beast of prey. That is to say, however, scared you might be, you must not on any account let him see you were frightened, and above all, never for one moment take your eye off him. Once this lesson was learned I found no trouble in dealing with the most fiery of senior officers, even non-combatant ones.

While organizing my rat campaign I had to travel far and wide over the Army area, interviewing all manner of officers from proud brigadier-generals to suspicious quartermasters. The latter were by far the more difficult to deal with. Not only were they suspicious—there was nothing about rat-catchers or catching rats in K R,—but they particularly resented any assumption on my part that their stores might be better if they were protected from rats by wire-netting. Considering that by this time almost every quartermaster's store had become so swarming with vermin as to be a sort of combined House of Commons, Queen Charlotte's Lying-in-Hospital and R A C for rats rolled into

one, it might have been thought that any suggestions to improve matters would be welcomed. But this was far from being the case.

My whole time was not taken up paying visits, for, as G O C rats, I had to deliver lectures. These began in a quite small way at Hazebrouck, where a school of sanitation for officers had been started, and where courses of lectures were delivered by various experts, each on his own special subject. Last but not two on the syllabus of subjects, came mine on rats, the two even lower on the list being flies and parasites, the experts on which were familiarly referred to as O C Maggots and O C Lice. The audiences consisted of officers, some of them regimental medical officers, but for the most part young combatant officers belonging to various infantry regiments, artillery brigades, Royal Engineers, machine gunners, Army Service Corps, etc., in the Second Army. Until my lectures became better known my reception by my pupils was invariably chilly. No bones were made about letting me see that I was wasting their time by talking about rats, time which could and should have been so much better and more agreeably occupied in other ways, some not unconnected with those cafés, half club half brothel, which provided drink for the thirsty on the ground floor and solace for the bored upstairs. But it was gratifying to the lecturer to observe the gradual change from undisguised boredom to attention, then to interest, until finally the audiences actually became enthusiastic.

On the days I was to lecture I used to lunch at the Coq d'Or, a comfortable old-fashioned hotel in the Grand Place. In happier days before the War the local Flemish farmers probably met there for their "ordinary." Down the middle of the big dining-room ran a long table. By common consent one half of this table was occupied by the farmers, the other by the British officers who were stopping at Hazebrouck for the course. During the *déjeuner à la fourchette*, a youthful officer, I think he was in trench mortars but cannot now be certain, asked the company in general what was "on" that afternoon, to which another equally juvenile warrior, a second lieutenant in machine gun, replied, "Oh, some bloody old fool is going to talk a lot of bunk about rats." I dropped my eyes to my plate but kept my ears open. The subject of my lecture at once became the topic of general conversation, and I soon learned that both the unheard lecture and the unheard lecturer were beyond the pale, but no one spoke more bitterly nor more frankly about both than the machine gunner. Many different points of view were expressed about myself and my lecture, but the unanimous verdict was that it was a scandal that officers like themselves should be compelled to waste their time and rare leisure listening to a silly lecture about rats. Who in any case wanted to be told anything about rats? Had they not seen all the rats they wanted to in the trenches? And why could they not be allowed for once to forget about rats?

Half an hour later I stepped on to the raised platform in the lecture-room. Exactly opposite me, in the middle of the front row, was seated the young

machine-gun officer Our eyes met in mutual recognition He knew that I knew, and I knew that he knew I knew How uncomfortable he looked! Truly I felt sorry for him for I quite saw his point of view But he and I were not the only two in that room who appreciated the situation—a feeling of electricity pervaded the hall

“Gentlemen,” I began, “just now, while at lunch at the Coq d’Or, one officer asked another what was on this afternoon The other officer, whom I observe seated amongst you”—here a stern look at the crestfallen lieutenant—“replied, ‘Some bloody old fool is going to talk a lot of rot about rats’ ” “However,” I continued, “I bear him no malice, and only hope that he will find my lecture not as dull as he expected nor think me quite such an old bore as he feared ”

This opening being greeted with applause, permission to smoke was given, the lecture began, and in no time we were all as jolly as jolly could be At the end of the lecture, the machine-gun subaltern and I had a friendly chat, about all sorts of things, including rats, and parted the best of friends

This lecture became in time, if I may be allowed to say so, a feature of the War, and the envy of the other armies of the B E F , which had neither a rat officer nor rat lectures Like many other successful concerns, such as Toc H or the B B C or Sir Josiah Stamp, the rat lectures began in quite a small way, to grow and expand into a flourishing undertaking

‘ 1 8 9 7 —

GORDON S SEAGRAVE

The conversion of a medical missionary into a military surgeon is well told in the story of Dr Seagrave His characteristically direct approach to problems and his ability as a leader and organizer enabled him to create an efficient surgical unit which operated as well under fire as in more peaceful situations

WE STARTED operating at once Those operations before dawn that morning are hazy memories All that stands out in my mind is the trouble we had keeping plaster casts on our patients There was a high percentage of bone injuries requiring “Spanish treatment” and we were using plaster steadily, but it was very inferior and took so long to set that the patient was awake and tearing at it while it was still soft Nurses tied arms and legs together, but the patients tried so hard to get free that the casts were cracked and broken While I was removing a foot of intestine from one badly injured patient, Mr Case walked in He was delighted that we were doing something for the Chinese, but he could not permit us to remain in the agricultural-school buildings He had had a great deal of trouble keeping a sufficient number of boys with him to help secure food for the Army If we remained the

boys would be in terror of our drawing a Japanese attack on the buildings and they would run away I did not tell Mr Case that if his boys ran away from the group of girls working with me they would be the only males in the world capable of doing so! The best way Case would ensure having his staff of males remain on duty in the agricultural school, bombs and all, would be to keep our girls located there But I was too sleepy and busy to argue During a short lull we piled our packing cases back onto the trucks and moved over to the "Child Welfare Center" where there was one small, very inferior building On the bottom floor were two small open porches We chose one of the porches for the operating room and set up four operating tables The upstairs floor was soon covered with bedrolls, while the main floor was reserved for patients The ambulances now returned from their second trip to the front, and with a good deal of trouble, the Friends located us in our new setup We started operating again and were soon in our stride This was getting to be old stuff Four of the nurses were upstairs getting a little sleep preparatory to taking over when the first group downstairs dropped from exhaustion Two of them, with the help of Low Wang and Lieng Sing, were giving first aid to the casualties as they were brought in and deciding the order in which the patients would be sent for operation Esther and Big Bawk each had two tables assigned to them and were pouring chloroform in a way that would have delighted Tiny, who taught them Koi, Kyang, Tswi, Ruth and Little Bawk were assisting, one at each table The sun began to scorch us Off came my surgeon's gown, then my rubber apron I would rather catch a Japanese bomb than perish from heat stroke as I moved from table to table debriding devitalized tissues, putting bone fragments together, throwing powdered sulfanilamide tablets into the wounds and applying plaster casts Sweat was still pouring and my shirt, undershirt, and stockings came off and were thrown into a corner, leaving me in nothing but a pair of bloody shorts It was grand to be a man! I could work in a pair of shorts without anyone's getting excited! The poor nurses were not so fortunate Their thin little Burmese jackets plastered tight to their bodies, they had to sweat and gasp and like it! A squadron of Japanese bombers passed over us on its way to Mandalay, and I forced the girls to jump into the slit trenches in the back yard An hour or so later the formation returned Since the girls were convinced that all bombs had been disposed of and that the planes were returning empty, I could not persuade them to leave off operating Just as the planes were straight above us the bombs began to scream downward

"Lie down, you darn little fools," I yelled as the bombs burst a scant two hundred yards down the street

Paul had dragged the spare nurses into one of the trenches and heard them praying as the explosions shook the house, "Oh, God, don't let the doctor get hurt, don't let him get hurt!"

As fire began to sweep the town we returned to our operating tables

Civilian bomb casualties were now being brought in I simply could not locate the bullet in the thigh of one of our Chinese patients

"Here, let me have a try," said Koi. She inserted one tiny finger in the wound, using it as a guide for a long forceps, and out came the bullet!

"Listen, woman, what are you helping me for? You take over this table and do your own damned operations! I'm busy. Debride each case, get the bullet or shell fragment out if you can, pack the wound, and if the destruction is extensive, put on a plaster cast."

Kyang Twasi and Ruth were getting along pretty well also. All I needed to do was select uncomplicated cases for them, explore, and leave them to trim, while I kept them in view out of the corner of my eye. Little Bawk and I handled the worst cases—abdominal, chest, and head wounds. Just as we were really going to town I looked up and saw General Stilwell standing in the doorway! The room behind him was littered with the patients we had been operating on, lying on our little cotton mattresses. On the ground outside nurses were receiving patients from the trucks and giving first aid. Three Chinese casualties were standing by the wall of the operating room waiting for nurses and Friends to carry away the one who had been operated on so they could climb up on the vacant operating table and sigh thankfully as Bawk or Esther began to chloroform them. My body was covered with blood. Well, I was in for it! the general certainly wouldn't have any use for me now!

IX

WRITING AND POLITICS

[Politics] is not a public chore, to be got over with. It is a way of life.

Plutarch

I am at the bottom of my page, and ask myself why did I write? What had I to tell?

Oliver Wendell Holmes

Throughout history are to be found numerous medical men who also engaged in political activity. This fact should not lead to the conclusion, however, that professional training and activity necessarily endow the doctor with special qualifications for politics. Aristotle long ago pointed out that man is a political animal, and this quality the doctor shares with his fellow-men. Involvement in politics may be a sheer accident for the doctor, or it may result from some special feature of the medical calling, but most generally it depends on the social position of the doctor, and on the opportunity for political activity to be found in his society.

The figure of the medical politician is most prominent in the eighteenth and nineteenth centuries, and it is interesting to note that this prominence coincides quite closely with the rise of democratic and liberal movements in Europe and America. A representative figure in America is Benjamin Rush (1745-1813), an ardent champion of the cause of the American Colonies, and a staunch advocate of independence. He served in the Continental Congress and was one of the signers of the Declaration of Independence. In his memoirs, Rush gives a vivid picture of his period of service in Congress.

On the Continent, one of the outstanding political doctors was Rudolf Virchow (1821-1902), best known to physicians as the founder of cellular pathology. Entering the political arena in 1848, Virchow remained active in politics until the end of his life. His political attitude was an application of his fundamental scientific convictions, and he consistently maintained the social nature of medicine. "Medicine is a social science, and politics nothing but medicine on a grand scale." Virchow's political activities during the Revolution of 1848 rendered him *persona non grata* to the Prussian government, so that in 1849 he accepted a post in Wurzburg. In 1856 he was recalled to Berlin, where for almost half a century he carried on the work on which his fame is based. In 1862 he was elected to the Prussian Diet where he not only worked for social and hygienic reforms, but energetically opposed Bismarck's foreign policy. From 1880 on, Virchow was a member of the German Reichstag, where he continued his work for liberal and progressive reforms.

The parliamentary labors of a political doctor are not necessarily arduous, and may easily have a humorous side, as we learn from the experience of Alfred Grotjahn. As a result of his interest in social problems, he became a member of the German Social Democratic Party. After the November Revolution of 1918, and the establishment of the Weimar Republic, Grotjahn was elected to the Reichstag in 1921 where he served as a deputy until 1924. In his autobiography he devoted a chapter to his parliamentary experiences.

1745 — 1813

BENJAMIN RUSH

ON THE 20th of July I took my seat in Congress in consequence of an appointment received from the Convention that met to form a constitution

for Pennsylvania A few days afterwards I subscribed a copy upon parchment of the declaration of independence

I was surprised to observe how little of the spirit of that instrument actuated many of the members of Congress who had just before subscribed it, proofs of this remark shall be given in the characters of several of them in another place

I took a part in several debates The first or second time I spoke was against a motion for a Committee of Congress, to meet Lord Howe in their private capacity, to confer upon a peace with Great Britain On the same side of the question John Adams, Dr Witherspoon and George Ross spoke with uncommon eloquence The last of those gentlemen began his speech by asking—what the conduct of George the 3rd would be had Congress proposed to negotiate with him as Elector of Hanover instead of King of Great Britain—he would spurn, and very properly spurn the insulting proposal “Let the American States,” said he, “act in the same manner We are bound to cherish the honor of our country which is now committed to our care Nothing could dishonor the sovereign of Britain, that would not in equal circumstances dishonor us” In the conclusion of my speech, I said, “that our country was far from being in a condition to make it necessary for us to humble ourselves at the feet of Great Britain We had lost a battle, and a small island but the city and State of New York were still in possession of their independence But suppose that State had been conquered, suppose half the States in the Union had been conquered—nay, suppose all the States in the Union except one had been conquered, still let not that one renounce her independence, but I will go further,—should this solitary State, the last repository of our freedom be invaded, let her not survive her precious birthright, but in yielding, to superior force, let her last breath be spent in uttering the word *Independence*” The speakers in favor of the motion were Ed Rutledge, Thos Lynch, John Stone, and several others One of them in answer to the concluding sentence of my speech, said, “he would much rather live with *dependence*, than die with independence upon his lips” The motion was carried with some modification The committee appointed to confer with Lord Howe were Dr Franklin, John Adams and Edward Rutledge John Adams objected for a while to going upon this embassy, but was prevailed upon by the minority to consent to it They met on Staten Island, but the conference ended in a discovery that Lord Howe had no power to grant us peace, upon any other condition than a rescinding the declaration of independence

The issue of this negotiation demonstrated that the time in which the States declared themselves to be independent was the proper one It prevented their dissolution after the defeat and the retreat of the American armies in the subsequent summer and autumn It moreover produced a secession of Tories, and timid Whigs from the councils of the United States, and left the government of the country in the hands of men of fixed and determined principles and

temper Maryland had yielded a little to the gloomy complexion of public affairs. She had instructed her delegates in Congress to vote for an accommodation with Great Britain *any measure* (meaning independence) to the contrary, and one of the delegates said to me in the street soon afterwards, that General Howe's proclamation contained everything we could wish and that we ought now to submit to Great Britain.

In the debates upon the confederation of the States I took a part with those gentlemen who objected to the small States having an equal vote with the large ones, and urged the necessity of the States being represented according to numbers, in order to render liberty equal and durable in our country.

I spoke in several other debates upon questions of less magnitude than those which have been mentioned.

After the retreat of the American army through New Jersey, Sir William Howe discovered a design to pursue them across the Delaware, and take possession of Philadelphia. Under an apprehension of this event the Congress adjourned to meet in Baltimore in the State of Maryland.

Upon the motion for leaving Philadelphia, Samuel Adams (who seldom spoke in Congress) delivered a short but very animating speech. His feelings raised him frequently upon his toes at the close of his sentences. There was nothing very oratorical in his manner, but what he said infused a sudden vigor into the minds of every member of the house.

As soon as Congress adjourned I took measures to provide a safe retreat for my family at a relation's house, on the Susquehannah in Cecil county in Maryland. I took part of my furniture and all my books out of town and left them at the house of Philip Price near Derby. At this house Sir William Howe made his head-quarters in one of his excursions from Philadelphia, and on one of my mahogany tray tables he wrote his despatches to England, in which he gives an account of the events which closed the campaign of 1776. This table bears the marks of his ink to this day. My property received no other injury from him. Having left my family with my kinsman Col. Hall, I returned hastily to join the Philadelphia Militia who were ordered out to reinforce General Washington's army, and thus to prevent the reduction of our Capital. I was then resolved to stand or fall with my country. I accompanied my fellow citizens to Bristol where I remained for some time, superintending their health and encouraging them to firmness and perseverance in defence of our liberties and independence.

In December I visited General Washington in company with Col. Jos. Reed at the General's quarters about 10 miles above Bristol, and four from the Delaware. I spent a night at a farm house near to him and the next morning passed near an hour with him in private. He appeared much depressed and lamented the ragged and dissolving state of his army in affecting terms. I gave him assurance of the disposition of Congress to support him, under his present difficulties and distresses. While I was talking to him I observed him

to play with his pen and ink upon several small pieces of paper. One of them by accident fell upon the floor near my feet. I was struck with the inscription upon it. It was "victory or death."

1821 — 1902

RUDOLF VIRCHOW

Charité, May 1, 1848

11 o'clock in the evening

Dear Father,

Don't be angry because I have given you my frank opinion. For a long time, I have consciously looked at our age freely and clearly, and have assimilated the movements of our time with alertness and in good time. I have often been deceived in people, but not yet in the age. As a result I have had the advantage that now I am not a partial man, but a whole one, and that my medical creed merges with my political and social creed. As a natural scientist I can be only a republican, for the realization of the demands, which arise from the nature of man, and are determined by natural laws, is possible only in a republican state. As I have said, for me the main thing is not a republic with an elective president, for I also accept a hereditary one, that is, a king without prerogatives.

As soon as the election of the deputation is completed, we will proceed immediately to medical reform and I hope that it will be a radical one. Here too the pigtail* must be cut off, and the democratic element achieve a position of influence.

1869 — 1931

ALFRED GROTHJAHN

AS REGARDS my own parliamentary exploits, there is not much to tell. Seven times I succeeded in obtaining the floor during a plenary session, and in holding it for more or less brief periods. At any rate, it is not easy for a political novice to receive the floor when a party group such as ours † numbers 114, and after the merger with the Independents ‡ 173 deputies. On April 6, 1922, I spoke for the first time on the subject of the budget for the Reich Health Office to a completely indifferent house. It was already late. I spoke more briefly than I had originally intended, because it was precisely

* The reference is to the pigtail in Germany as a symbol of antiquated and reactionary attitudes.

† Social Democrats

‡ Independent Social Democrats

this evening that I was invited to President Ebert, and did not want to be late. The benches were empty. Only the stenographers below listened intently. The man against whom my polemical remarks were directed, Bumm, the President of the Reich Health Office, stood a few paces behind me on the ministerial platform and good-naturedly looked over my shoulder at my manuscript. Just in front of me, however, my stout party comrade, Hoch, had planted himself, and after every sentence that I spoke, he exclaimed, in a rumbling voice "Very true!" which was rather disconcerting. Later when I called him to task for his behavior, and desired to know the reason for his artificially cultivated enthusiasm, he explained "When the printed stenographic report appears, it will create an impression, to the satisfaction of yourself and the party leaders, that your speech had been received with intense interest by the house, or at least by the party, because as a result of my exclamations the text will be pleasantly interrupted everywhere by 'From the Left 'Very true!'"

Literary activity is more common among doctors than political activity, but few medical men devote any considerable portion of their time to writing. The motivations underlying such efforts vary, but the three selections presented here illustrate the most frequent types. In many instances, writing is hackwork by which a young doctor earns enough to keep the wolf from his door until he has established a secure practice. Samuel D. Gross describes such literary work in his autobiography, and James Paget in his *Memoirs* shows how one may derive advantage even from hackwork.

Then there is the doctor who begins to write in order to earn some extra money, but who achieves such success with his pen that eventually medicine is given up, and he devotes himself entirely to writing. Such was the case of A. Conan Doyle, whose creation of Sherlock Holmes was undoubtedly a minor stroke of genius. For with the incomparable Holmes and the inimitable Watson, he achieved a reputation that would probably never have been his had he remained a medical practitioner.

Finally, there is the doctor whose primary interest is literature, and for whom medicine is only of secondary concern, a means to an end. Havelock Ellis illustrates this point of view very well. In his autobiography, he stresses his literary interests and presents a characteristic analysis of the development of his prose style.

1814 — 1899

JAMES PAGET

WRITING was a pleasanter occupation and more profitable, though very hard to live by. Still, it nearly sufficed for this, and after my return from Paris, I received only a few pounds from my father. He would have grudged nothing for me, but he had less than he needed to keep himself afloat and to maintain his home, his debts were increasing, and I soon had to take part in borrowing for him.

My first employment in writing was on the staff of the Medical Gazette—the predecessor of the Medical Times & Gazette—to which I was a subeditor for nearly five years, from 1837-1842, in succession, I think, to Dr Cummings, of the Aldersgate Street School of Medicine. It was then published by Longmans; its chief editor was Dr Roderick Macleod, of St George's, and the chief writer, except in my last year, was Dr Domeier. They were both thorough-going editors, good and pleasant to work with. It was, as it always had been, a completely respectable and rather dull journal, maintaining the tone with which it had been started in opposition to and contrast with the *Lancet*, which was then only beginning the departure, now long completed, from its old virulence. I used to write a leading article every two or three weeks, sometimes more often, and have been amused, after 40 or more years, to find them generally discreet, not lively or clever, very rarely political, chiefly on questions of medical education, on scientific progress, discoveries, and the like. But my chief work was with reports of lectures, reviews, and translations from French and German—and from Dutch, which I learned to read at the instigation of Vrolik and van der Hoeven, good friends whom I had been introduced to.

I used to earn from this work from £50 to £70 a year, and I have always been glad to have known the work of a journalist, and to remember how much less it is either influential or contemptible than those are apt to think who know nothing of it. It is good to know the kind of men that are reviewers, good to be able to estimate fairly, in after-life, the weight of their praise or blame, and to be quite sure that this weight is never great. And there is a use in being required, sometimes, to write off-hand about something half-known: it helps to give an ability which, like that for being crammed, is very valuable, provided only it be rarely exercised and kept rigidly under restraint. There is use, too, in learning to report from memory, as, for about two years, I reported the debates at the Medico-Chirurgical Society, not by taking notes, but by listening attentively and writing down at home the chief things said. I can clearly trace some of my faculty in the work of after-life to the having been on the staff of a journal.

Other journalist-work was with Dr (afterwards Sir John) Forbes in his *Quarterly Review*. It was heavier and more serious work, for the books had to be well read and very carefully analysed, and the best papers were to be translated. It was an excellent occupation and did me great good, especially when I wrote the *Annual Reports on the Progress of Anatomy and Physiology*. Very few, I think, read them; indeed, such Reports seem to be always intolerably dull reading, but I gained from them a reputation which was of the greatest help towards my getting the Lectureship at St Bartholomew's, and being fit for it. For it was necessary to read what is commonly understood as 'everything' on the subjects. And indeed it is interesting to think that one person could at that time, some forty years ago, read 'everything' published on Anatomy and Physiology, including all the journals in French, German,

and Italian, that were sent in exchange for the Review, or that I could find at the College or the Medico-Chirurgical Society. As I look at the heaps of Journals that now lie on the tables in those Libraries, I can believe that they would need at least four readers & writers all working as hard as I did.

In another way, and much more indirectly, my association with Sir John Forbes helped me. He was Sir James Clark's oldest and most intimate friend and I am sure that he gave a good report of my work and working-power, such as led towards the appointment of Surgeon Extraordinary to the Queen, which was conferred on me long before what might have been deemed my time.

When first offering to Dr Forbes to contribute to his Review, I wrote that I should be ready to translate papers from the French, German, or Dutch, and it struck me that it might be as well to add Italian, though I knew nothing about it. In answer there came a great packet of Journals, the majority of which were Italian, so this had to be learned and added to the languages in which I might read medical science. My ability hardly went beyond that science, and some newspapers.

I have forgotten what I wrote for these Journals almost as completely as any who may have read them, but the necessity of writing was very useful. It encouraged various and hard reading and careful analysis and clear expression, and I am not aware of any harm from it. Writing was not to be my profession, and it was prudent to conceal the extent to which I was engaged in it, so I never became proud of the calling or thought of it as influential or of myself as a guide of opinion.

Besides these Journals, I wrote for the Penny Cyclopaedia and the Biographical Dictionary, published by the then very important Society for the Diffusion of Useful Knowledge. In the former, I wrote nearly all the articles relating to human anatomy and physiology and surgery from 'Gunshot Wounds' onwards. In the latter, a great part of the biographies of the men most distinguished in these sciences. The writers for both these works (and they included many of the best of the time) had the advantage of working under a remarkably good editor, George Long. His own proper range was in classics, and ancient law, but he had in a high degree that singular power of widely-ranging good editors which enables them to detect errors or doubtful points in essays on subjects of which they know, of their own study, little or nothing. Nothing written lightly or carelessly ever seemed to escape him. It was for me an excellent exercise in accuracy—and in writing biographies—though the Dictionary came to an end at the close of letter A, in its 7th volume, and was said to have finally exhausted both the patience and the funds of the Society. The work was in an entirely new field, and had to be done in what was to me a nearly new manner—with the reading of old books, and the searching everywhere in old journals and the Transactions of old Societies, and tracking my way for references anywhere, so as to have at least a nearly complete list of every considerable writer's works. I had, before

this, known very little of the history of medicine I ended with knowing not much more, but with a clear impression of the immense difficulty of writing an accurate and nearly complete history of any time or science, and with a thorough disregard for all histories written lightly or prettily Besides, I learnt more than ever the value or necessity of always referring, if possible, to the very book, volume, and page quoted from, or from which any statement is made, and the similar necessity of verifying every reference made from another Nothing could better teach the difficulty, necessity, and rarity of accuracy in writing than did this work in biography

All this reading and writing, whether in my rooms or in the Libraries of the British Museum and the College of Surgeons, cost me many hours a day, I cannot remember or guess an average I was at times very poor, but I lived plainly and quietly, and especially ate and drank simply whether at home or in decent chop-houses, and, with some measure of respect for the discipline of fasting, which was then being revived among Churchmen, I went without dinner on Fridays and learned the value of dates and raisins for averting hunger I lived indeed so quietly in these years that I can remember anxiety, and almost fear of coming evil, if in the evening unusual footsteps approached my room Work generally went on till 1 or 2 in the morning, and I was seldom away on more than one evening in the week, and then made up for the time of recreation by sitting-up till 3

1859 — 1930

A. CONAN DOYLE

IT WAS about a year after my marriage that I realized that I could go on doing short stories for ever and never make headway What is necessary is that your name should be on the back of a volume Only so do you assert your individuality, and get the full credit or discredit of your achievement I had for some time from 1884 onwards been engaged upon a sensational book of adventure which I had called "The Firm of Girdlestone," which represented my first attempt at a connected narrative Save for occasional patches it is a worthless book, and, like the first book of everyone else, unless he is a great original genius, it was too reminiscent of the work of others I could see it then, and could see it even more clearly later When I sent it to publishers and they scorned it I quite acquiesced in their decision and finally let it settle, after its periodical flights to town, a dishevelled mass of manuscript at the back of a drawer

I felt now that I was capable of something fresher and crisper and more workmanlike Gaboriau had rather attracted me by the neat dovetailing of his plots, and Poe's masterful detective, M Dupin, had from boyhood been one of my heroes But could I bring an addition of my own? I thought of my

old teacher Joe Bell of his eagle face, of his curious ways, of his eerie trick of spotting details. If he were a detective he would surely reduce this fascinating but unorganized business to something nearer to an exact science. I would try if I could get this effect. It was surely possible in real life, so why should I not make it plausible in fiction? It is all very well to say that a man is clever, but the reader wants to see examples of it—such examples as Bell gave us every day in the wards. The idea amused me. What should I call the fellow? I still possess the leaf of a notebook with various alternative names. One rebelled against the elementary art which gives some inkling of character in the name, and creates Mr. Sharps or Mr. Ferrets. First it was Sherringsford Holmes, then it was Sherlock Holmes. He could not tell his own exploits, so he must have a commonplace comrade as a foil—an educated man of action who could both join in the exploits and narrate them. A drab, quiet name for this unostentatious man, Watson would do. And so I had my puppets and wrote my "Study in Scarlet."

I knew that the book was as good as I could make it, and I had high hopes. When "Girdlestone" used to come circling back with the precision of a homing pigeon, I was grieved but not surprised, for I acquiesced in the decision. But when my little Holmes book began also to do the circular tour I was hurt, for I knew that it deserved a better fate. James Pavn applauded but found it both too short and too long, which was true enough. Arrowsmith received it in May, 1886, and returned it unread in July. Two or three others snuffed and turned away. Finally, as Ward, Lock & Co., made a speciality of cheap and often sensational literature, I sent it to them.

"Dear Sir," they said,—*"We have read your story and are pleased with it. We could not publish it this year as the market is flooded at present with cheap fiction, but if you do not object to its being held over till next year, we will give you £25 for the copyright."*

"Yours faithfully,

"Ward, Lock & Co

"Oct 30, 1886

It was not a very tempting offer, and even I, poor as I was, hesitated to accept it. It was not merely the small sum offered but it was the long delay, for this book might open a road for me. I was heart-sick, however, at repeated disappointments, and I felt that perhaps it was true wisdom to make sure of publicity, however late. Therefore I accepted, and the book became "Beeton's Xmas Annual" of 1887. I never at any time received another penny for it.

1859 — 1939

HAVELOCK ELLIS

BEFORE I was twelve I had spontaneously begun to write a sort of prose, before I was fifteen I had begun to write a sort of verse, but the one and the

other were completely lacking in any note of personal style. At seventeen I was beginning to write sonnets and these were distinctly more personal in substance, although not definitely original in form. At eighteen I was deliberately studying the technique of verse in Tennyson's *In Memoriam* and that most technically instructive of lyrics, 'Break, break, break.' But all these years I gave no thought to prose and translations. Now at nineteen I opened a manuscript book and filled it gradually with a dozen different notes of observation, criticism, or comment, written carefully and deliberately, in a way that was alike in substance and in form personal, and traceably the early expression of my native self, my first *Impressions and Comments*.

Writing for me was of the nature of a natural instinct. I never at any time set myself deliberately to learn how to write prose, after the manner of a writer who in my time still enjoyed considerable reputation, Robert Louis Stevenson, so making the writer's art an accomplishment such as those taught in the ancient Academies for Young Ladies. When I have studied the art of writing, it has been as a critic rather than as a practitioner. Still less have I ever deliberately sought to imitate the methods of some admired master, for I have never wanted to be anyone but myself. I abhor the doctrine of those who teach that a writer's style must be moulded on the style of other writers. A man's style must be moulded on himself, it is himself. I wrote simply because I had something to say, and my ultimate deep, even if unconscious, impulse was to attain self-expression. But it is inevitable that we should be unconsciously imitative before we become complete masters of our natural methods of expression, and I am sure, that, however little I may have been aware of it, I could not have escaped that necessity. When in recent years I have looked back, from as it were outside, on my own origins, it has seemed to me that the master by whose style I was most influenced unconsciously when at Sparkes Creek I first began, in the real sense, to write was Newman. At Burwood, two years earlier, I had bought a lately published volume of selections from Newman, why I cannot tell except that I was impartially interested in every aspect of humanity that was in its own manner good, for Newman was as alien to me then as he has ever been. I read the book with the deliberate care with which in those days I always read books, and for the most part I found little of interest in it, before long I parted with the volume. But I remember that there were several passages in it that seemed to me of an enchanting melody. That seductive and insinuating music acted upon me, as I now believe, more potently than I knew. It is not obtrusive, it is only now and then that it comes into his writing, and it comes without forethought, seemingly without consciousness, it is the style that is the man, the man in the most intimate fibres of his racial ancestry, for one detects through it the instinctive artist in style which we associate with France. To me that artist has always been fascinating. So it may have come about that, when at Sparkes Creek I began to write out of myself, my way of writing at first unconsciously tended to fall into the strains of a music which the fibres of my nerves had

learnt from Newman—‘one of the greatest masters of quietly exquisite prose,’ he has been called by a sound judge, ‘that the world has seen’ In all my earliest writings, then and for some years later, my instinctive ideal of style was delicate, allusive, musical, with more care for sweetness of melody than for choice of jewelled or emphatic words The *New Spirit*, my first book, represented the end of this stage Afterwards I rebelled to some extent against this way of writing, it seemed to me a little too refined, and I knew that some people—unliterary people, it is true—were impatient with it and found it obscure A change took place in my method Music was no longer its ruling motive, and I wrote in a more masculine way Whether the change was really due to discontent with my earlier way or whether that discontent was merely the outward sign of a deep and instinctive movement of personal development I cannot now say In the spiritual world it is not always easy to distinguish the cart from the horse In any case my style became more vigorous and more pungent I was more deliberately careful to select the just and effective word I sought to avoid all literary allusiveness except when it was urgently necessary for my purpose and could be made clear even to an unliterary reader of intelligence I supplemented my already acquired tendency—doubtless the outcome of my medical training—to use technical and precise words by a complementary tendency to use also simple and figurative words from vulgar speech, and my imagery became more homely *Affirmations* represents this second stage in the development of my manner of writing In this stage, however, the robust vigour which had developed by reaction from the sensitive delicacy of the earlier stage, tended sometimes to take on an air of rather self-conscious bravado which, I found, was a little repellent to one or two who loved me and my work, especially my wife, and was not sympathetic to my own most genuine tastes It was then that I entered on the third, the most characteristic and I suppose the final stage in the growth of my literary style I left behind a gusto of rankness which might possibly be detected in the second phase and conciliated what was left with the more delicate and musical first manner It was then that I wrote, and continue to write, *Impressions and Comments*, certainly at once the most intimately personal, the most spontaneous and the most deliberately moulded, of my writings

X

REFLECTIONS ON LIFE AND DEATH

Other grave matters, which those will like best who understand them most
Henry Fielding

The end of our conducted tour is now at hand, and at this point we may stop and look back. In the course of this tour we have listened to many doctors. Some were exceptional, some typical, but each one spoke for multitudes of others. Linking them all is the activity of recording their experiences, and presenting a picture of life as it looks to the doctor.

Some of these writers, by virtue either of natural temperament, or of age or opportunity, realize that at some time in life, there should be a day of reckoning, when judgment is pronounced upon the world of men and things. Commonly, this occurs late in life, or shortly before death. Reflection on the meaning of experience leads to more general reflection on broad problems of life and death. Views of Nature, conceptions of life, the relationship between the real and the ideal—all these and many others find their place in the summing-up.

This section presents a characteristic sampling of such expressions of opinion. Self-analyses by Gall, Hinton and Virchow, are followed by more general statements of attitudes to science and religion by Billroth, von Bergmann, Grenfell and Schweitzer. Finally, varied reactions to death, the last line of the book, ranging from the suicidal despair of Wells to the heroic stoicism of Zinsser, bring our journey to a fitting conclusion.

1758 — 1828

FRANZ JOSEPH GALL

THE following selection is from a letter written by Gall, the founder of phrenology, from Paris on October 23, 1825 to his friend Andreas Streicher (1761-1833), a Viennese piano manufacturer.

I have opened up a truly great path, I have overcome innumerable obstacles, having had to contend with all the varied prejudices of metaphysicians, philosophers, moralists, theologians, governments, physicians, anatomists and physiologists. Instead of support and encouragement, I found only persecution etc.—but, thanks to God and my conscience, I have never lost either sleep or appetite because of this. Now I am sometimes pursued by the demon of avarice. Perhaps this too had to be interwoven with my fate. Sometimes I say to myself: People are not worth that one should sacrifice himself for them. If you had saved the sums that you spent on your laborious investigations, you would now be independent. Now, however, I have to work to satisfy all the essential necessities.—If my chest were completely free, if my bones didn't ache from climbing stairs—in God's name—to save one person from death here, or to help another on his way somewhere else, for this is always a respectable occupation,—if I were at rest, I would become melancholy—every virtue must be practised. So you see, my dearest friend, in this manner I console myself once again.

1822 — 1875

JAMES HINTON

James Hinton, the third child of a Baptist minister, was born at Reading, England, in 1822. In 1838 his father left Reading for London, and feeling the pressure of economic circumstances placed his son James in the first position that presented itself, that of a cashier in a shop. After about a year Hinton became a clerk in an insurance office. While thus employed, he used his evenings to give himself a miscellaneous education. As business was not suited to him nor he to business, his father decided to let him study medicine. Consequently, at the age of twenty, Hinton entered St Bartholomew's Hospital. In 1847 he became a member of the College of Surgeons, and in the autumn of that year took a position of surgeon to a shipload of freed slaves, who were going to Jamaica. He remained over a year in Jamaica, taking care of the practice of a doctor who was ill. After this experience, Hinton continued to take a great interest in the Negro problem.

On his return to England, he became engaged to Margaret Haddon. Around 1850 Hinton became interested in aural surgery, and soon was associated with Joseph Toynbee, for whom he dissected specimens and formed a museum. In 1852 he was married and began to practice. During this period, Hinton pursued his studies on the diseases of the ear. In 1863 he was appointed aural surgeon to Guy's Hospital, and began to practice as a specialist. Several years later, when his friend Toynbee died, he took over his practice and became the most eminent aural surgeon in London at the time. In 1868 he performed the first operation for mastoiditis in England. In March 1874 Hinton retired from practice, and in 1875 sailed for St Michaels in the Azores. His health had been poor for some time and, shortly after his arrival in St Michaels, he died.

Hinton is remembered not only as an aural surgeon, but also as a philosopher. His work on otology, *Questions of Aural Surgery*, is full of original ideas. However, his chief interest was philosophy, and when he retired it was with the intention of devoting himself exclusively to this interest. In addition, Hinton was interested in social problems, art, and music. Through his writings, and the example of his life, he exerted a significant influence on the career of Havelock Ellis (see page 122).

AS REGARDS my father, I myself see one or two things in him (chiefly his manner) which are repugnant to me, but if any one dislikes his nature, it can only be because they don't know him. I speak deliberately, and, I think, impartially, when I say that I have never been intimately acquainted with any man whose whole soul could bear as searching and thorough an examination. I don't know any character for which I have so high a veneration.

I don't speak of certain aspects only, but of the whole of it. It is alike great and good, with no more defects in it than are necessary to make it human. There are many great qualities in him which are obvious to all, but I am not referring to those. I am thinking of his private virtues, which only those who live constantly with him can appreciate or even know of. I refer

to his kindness, his humility, his self-control, his willingness to acknowledge himself in the wrong, and to make amends for any transient harshness of temper, his forbearance towards those who are weaker than himself, his active and generous benevolence, and the exemplary way in which he fulfilled his duties as a husband and father. These qualities, I know, do not appear, they are obscured to the public view, but they are not the less real and genuine, and they exist to an extent of which very few people have any conception.

It is the rarest thing in the world, and you must not expect, it, to have opposite qualities combined in the same individual. Gentleness and charmings are excellent things, and gentle and charming people could not be dispensed with, but neither could those men be who are by no means charming, and possess but little gentleness, and accomplish a great deal of very necessary work which gentle people would never undertake.

And now, by speaking of my father, I have prepared the way for saying a few words about myself, and I must at once admit that I labour under many defects in regard to my manners and so on. I am very sorry for it, and yet I am not without my consolations, not that I undervalue good manners, but what consoles me is, that I can give a good reason for my want of manners, viz, that the time and thought which might have been spent in acquiring them, have been devoted to the pursuit of objects at least as worthy.

Although not naturally gifted with gentlemanly manners, no doubt, I might have acquired them if I had given my mind to it. Politeness is like every other art, it may be learnt by time and study. But it wouldn't do for all to choose the same object, for then some important things would be neglected, and on that very account mutual allowances should be made. It would be unreasonable to find fault with a nice, well-informed, polite, agreeable, young man, because he hadn't read Berkeley and Hume, and accurately adjusted the claims of Idealism and Materialism. But it isn't much less absurd to call to account an unfortunate youth who has been simple enough to measure his strength against these and various other inscrutable mysteries, and has learnt thereby to know his own power and condition and duties, because he isn't equally useful at a party, and doesn't know so well how to tie his cravat. Nor is it at all a just assumption that the politest and most agreeable men are really the kindest or most desirous to oblige. They are often utterly and irredeemably selfish. I am very sure that many an awkward, slovenly, young man who never seemed to think of any one around him, or to see what they wanted, has thought and mourned for hours in secret over the evils which the vices of much more agreeable people than himself have inflicted on mankind, and has longed to make himself a sacrifice to cancel them.

I haven't in all this but a very remote and partial allusion to myself, but the inference I want you to draw is this, that you must be very patient with

the faults of manner you see in me They are bad enough, but they should have this to recommend them, they are the price at which all you love and admire in me has been bought

1821 — 1902

RUDOLF VIRCHOW

From letters written by Virchow to his parents in Schivelbein At this time, Virchow was studying medicine at the "Pepinière" in Berlin In one letter, his father, who was a farmer, had expressed concern over the future prospects of the young medical student The father felt that young Virchow was devoting too much time to fantastic scientific studies, and was neglecting his actual professional studies

Berlin, 22 February, 1842

My dear father,

You state that I am an egoist, that is possible But you accuse me of having an overweening opinion of myself, that is far from being true Genuine knowledge is conscious of its ignorance, how much and how painfully do I feel the gaps in my knowledge It is for this reason that I do not stand still in any branch of science I learn gladly, but I defend my opinions out of conviction

There is much that is uncertain and restless about me I admit it must be rather difficult to come to a clear understanding about me We began to speak about my future, but again you have probably not ended the conversation with satisfaction And how could it be otherwise? My future is too uncertain My circumstances for the present are very unfavorable, however much it may still appear that luck had accompanied me They compel me to do what I would not like to do, and what I wish I can hardly hope to attain It was always thus You wanted to make a fine society man out of me, something for which even now I care very little—In every vacation you told me that without that all my knowledge was worthless, and yet I was to be proud of it Had you found fewer faults on the one hand, and handed out a little more praise on the other, it would perhaps have contributed to the establishment of a relation between us which would also outwardly have been more intimate It hurts me too much to receive only reprimands from you and to see you always cross and angry, I could not decide to be tender when that which is dearest to me was dragged through the dust Nevertheless, I cherished it warmly in my heart Now it is similar My time is filled completely with hearing, learning, and repeating things that are in part very insipid, and for my own interest I can find a little time almost only at the expense of my health Nevertheless, I occupy myself zealously with that which I do not desire and which I find unpleasant, for at some time it may well become the only means of my support I will reconcile myself to it,

and will even be able to renounce my favorite occupations—for I have already endured more bitter experiences with equanimity. You regard me as rather heartless, because I have learned to appear serene, even when my heart is bleeding. I have never lacked the desire to do good, your admonitions were not addressed to me in vain, even when I contradicted them, and often enough I have surreptitiously endeavored to force my voice into the sweet, polite form that you demand. Frequently, I flattered myself with successes, but you disputed their occurrence and in addition even my good intentions.

When I recall this I always become somewhat bitter. I do not know whether it is good for me to send you this letter, as it is also my fate to be misunderstood. Yet I will venture it once more. At the moment I cannot answer completely your mournful letters. I wanted to say only this, that in me there is certainly much pride and egoism, even more than is good, much that is phantastic and dreamy together with perhaps a little good. But you misunderstand me if you think that my pride is based on my knowledge, the incompleteness of which I can see best, it is based on the consciousness that I want something better and greater, that I feel a more earnest striving for intellectual development than most other people. The uncertainty and inconstancy in my appearance, however, are due to the circumstance that I am taking a path other than the one that I should have and wanted to take. But it was the only one that brought me closer to the goal which I am striving to attain.

Dear Mother, Although I arrived here from Puttbus yesterday evening it is only now that I have an opportunity to offer you my sincerest congratulations on your birthday. I had actually intended to do so in person, but circumstances have rendered it possible for me to remain so long. In all probability I will not come home until the end of this week or the beginning of the next, and so I would not like to delay so long, since except for me hardly anyone will celebrate your birthday spontaneously. A good part of yesterday I spent at sea, during the crossing, and I had enough time to send my thoughts afar. If it is possible for minds to respond to each other sympathetically, undisturbed by space, then you must have felt how long and sincerely I thought of you—at least your ears must have tingled, as the saying goes. I will not go into any more detail about all the things that I wished you, for the most part it would have to be what has already often been said, as there are unfortunately not enough words for our feelings. One of my wishes, however, was that you might cease to complain in your tumultuous, excited manner about the decrees of fate which are always made manifest by people, and then appear as their work. As matters stand, they cannot be changed, and if one has not accustomed oneself early to seek contentment in one's own self, then there remains nothing else but to trust in one's friends. If these are lacking among people, as is more or less your case, there remains only religion. And just this will be

best suited to provide you with some contentment. Then, at any rate, you will lose that impetuosity, which so frequently leads you to oppose father, and that extreme intimacy, which unfortunately so often leads you to tell strangers about our affairs, and with this one of the main causes of the quarrels between you will be removed. Fate cannot be forced, and it is the duty of every mortal to occupy with dignity the place to which fate has assigned him, that is, not to degrade oneself and also not to cherish desires that cannot be fulfilled. Excuse me, if I have, in this rather blunt way, told you of the wish, which is almost the one for whose fulfilment I pray most sincerely, because it is this which in sickness and accident, even in death itself, makes for human happiness, and is therefore worth more than all the wishes for health, wealth and long life, which are so glowingly engraved in my soul.

If I were travelling simply for recuperation, I would already be home, for I find that in the long run travelling on foot with a good knapsack becomes somewhat burdensome. Consequently I will travel slowly, because I want to observe and to instruct myself.

Farewell

Your very affectionate son
RUDOLF VIRCHOW

Greifswald
31 August, 1841

1875 —

ALBERT SCHWEITZER

These remarks are from a letter, dated January 2, 1924, in which the famous medical missionary, theologian, musician, and philosopher explains his relation to religion and science to his friend and biographer Oskar Kraus, the Prague philosopher.

UNTIL now it has been my principle in philosophy to express only the absolutely logical experience of thought. For this reason I never speak of "God" in philosophy, but rather of the "universal will to Life," of which I become aware in a twofold manner, as ethical will within me, and as creative will outside of me. However, when I speak the traditional religious language, I use the word "God" in its historic precision and vagueness, just as in ethics I speak of "love" instead of "respect for life." For I am primarily concerned here to present the experienced thoughts in their immediate vitality and in their relation to traditional religiosity. In this way I make no concessions either to natural philosophy or to religion. For in both instances the content remains absolutely the same. Renunciation of cognition with respect to the world about me, and assertion of the primacy of the universal will to life experienced within me.

1815 — 1848

HORACE WELLS

Sunday evening, 7 o'clock

I AGAIN take up my pen to finish what I have to say Great God! has it come to this? Is it not all a dream? Before 12 o'clock this night I am to pay the debt of nature Yes, if I was to go free tomorrow, I could not live and be called a villain God knows I am not one O, my dear mother, brother, and sister, what can I say to you? My anguish will only allow me to bid you farewell, I die tonight, believing that God, who knoweth all hearts, will forgive the dreadful act I shall spend my remaining time in prayer

O! what misery I shall bring upon all my near relatives, and what still more distresses me is the fact that my name is familiar to the whole scientific world, as being connected with an important discovery, and now, while I am scarcely able to hold my pen, I must bid all farewell! May God forgive me! Oh! my dear wife and child, whom I leave destitute of the means of support—I would still live and work for you, but I cannot—for were I to live on, I should become a maniac I feel that I am but little better than one already The instrument of my destruction was obtained when the officer who had me in charge kindly permitted me to go to my room yesterday

Horace Wells

"To My Dear Wife

I feel that I am fast becoming a deranged man, or I would desist from this act I can not live and keep my reason, and on this account God will forgive the deed I can say no more

Farewell

H

1805 — 1884

SAMUEL D GROSS

I HAVE naturally, as all men must have, an instinctive horror of death, not because of any fear about the disposition of my soul, but because my life has been a pleasant one, and I would therefore be glad to hold on to it I have often thought that our lives are too short for the amount of labor we are obliged to perform Just as we begin to know how to live, and become comfortably settled, we are obliged to go hence, whither exactly we know not What my soul is God has not revealed to me Whatever it may be, He will, in His good mercy and great kindness, take care of it I have doubtless many sins, but more of omission than of commission I have never believed in original wickedness Man is only man, he is weak and frail by nature, and

he must therefore do a great many things that are displeasing to his Creator. Imperfection is his great characteristic.

When I am dead I should like to be burned. It is not to me a pleasant idea to be put six feet under ground, without the possibility of ever again reaching the surface. I have a great respect for urn burial, and hope the day is not distant when it will come into general use. I know of no more disagreeable sight than a graveyard, especially in a city. It is amazing that civilization should ever have tolerated such a nuisance. To me nothing is more distasteful or disgusting. It is a relic of barbarism of the worst kind. I want to be useful when I am dead, which I cannot be if I am stuck away six feet into the earth. If I am burned, my body will enter again into new creations, and thus be subservient to some useful purpose. It may assist in animating a flower, in ornamenting the plumage of a bird, or in directing the movements of a caterpillar. I prefer anything rather than to be obliged to decay in the earth and lie forever idle.

If I am obliged to be buried as other people are, I wish to lie in some spot where birds may sing over my grave, and where occasionally a friendly hand may deposit a flower, as a memento of respect and devotion to my memory. An immortelle is worth all the chiselled marble that was ever erected over a man's tomb.

There is some choice in regard to a man's death. If I could have my own way, I should select apoplexy as the most desirable mode of exit. It does its work quickly, and generally very gracefully, very much like an anaesthetic, without the consciousness of the individual. The Litany contains a prayer against sudden death, considering it as a great evil, but this has reference solely to a man's religious preparation. It assumes that a slow death affords a person a better chance to get ready for the kingdom of heaven. A sensible man should always be ready. His motto should be, *Nunquam non paratus*. I have seen so much of chronic death, as it may be called, that I pray God to preserve me and mine from its appalling affliction. What can be more horrible, more truly agonizing than death from consumption or cancer? When my hour comes I hope the Destroyer will do me a friendly act by extinguishing life in the twinkling of an eye, and thus save me from the pangs of gradual dissolution. "Oh, that my life may go out like the snuff of a candle!"

1871—1945

WALTER B. CANNON

IT SEEMS probable that co-ordinated progress in research, progress characterized by a natural development from one group of ideas to another, instead of a flitting from interest to interest in a quite inconsequential manner, is conducive to persistent effectiveness in productive scholarship. In this type of

research, as studies advance and new facts are discovered, fruitful ideas accumulate and earlier ideas take on new meanings. As a result, fresh opportunities for exploration are frequently disclosed. The researches which my collaborators and I carried on in the Physiological Laboratory of the Harvard Medical School were of this co-ordinated, progressive character. The studies on digestion went forward from my twenty-sixth year, when I first used the bismuth meal, until I was forty. From forty to forty-six the studies on the bodily effects of emotional excitement were emphasized. Investigations on wound shock (an intrusion due to World War I) took place between forty-six and fifty-one. Interest in stable states in the organism developed between fifty-one and fifty-nine, attention was given to chemical mediation of nerve impulses from fifty-nine to sixty-eight, and after that time an effort was made to complete a series of observations on the effects of severance of nerves on sensitizing to chemical agents the isolated structural elements. The foregoing must be taken as only a rough statement of the distribution of my interests, however, and not as a precise separation of them at the ages which are set down, there was always considerable overlap. Incidentally investigations were undertaken as to the nature of hunger, the nature of thirst, and, in my seventy-first year, on the phenomena of a pace-maker in the rhythmic pulsations of the cerebral cortex. During more than four decades of attention to physiological investigation I was not conscious of an abatement of imaginative insight into problems to be solved or into methods by which solutions of them might be attained. This judgment must be taken with a grain of salt, however, because advancing years may have marred the reliability of my testimony!

There may be a large discrepancy between physiological old age and chronological old age. Some men are old at fifty-five and others are young at seventy-five. As the decades slip by, however, all of us are subject to bodily changes, some obvious and some hidden. Brown spots appear on the face and hands. The hairs grow long in the ears and nostrils, and the eyebrows become shaggy until they may lend a fierce look to the countenance. The skin is less elastic, as is shown by pinching it on the back of the hand and noting a briefly persistent ridge instead of a prompt snap back to the proper level. The "pregnant hinges of the knee," as well as other hinges in our limbs, are not so well lubricated as they used to be. The near point of clear vision recedes until with unaided eyes the elderly person, holding the page at arm's length in order to see it clearly, is bothered by the indistinctness due to distance, caught between these troubles of too near and too far, he moves the page back and forth—as Holmes put it, he has reached the "trombone age!"

Besides these more or less obvious changes there are others, revealed by physiological investigation, that we may not recognize. For example, there is a gradually increasing limitation of the effectiveness of the homeostatic devices which keep the bodily condition stable. The ability to control body temperature is so much diminished that the old man needs more wraps during the cold of winter, and he hovers near the fire or the radiator as he did not

when younger. Also he is likely to find the heat of a summer's day especially uncomfortable, indeed, the death rate from heat stroke rises sharply after the seventh decade of life. Furthermore, the organs which prevent the appearance of acid in the blood—the lungs, the heart, and the blood vessels—perform their functions less efficiently as one grows older. The chest becomes more rigid and thereby lessens the maximal intake and output of respired air, the highest heart rate induced by exercise gradually decreases, and the pumping of blood in a supreme effort is therefore slower with advancing years, and the blood vessels may become hardened and surrounded with obstructive connective tissue. Vigorous exertion, which produces acid and thus interferes with physiological efficiency, cannot be engaged in as it was in youth. The elderly man can look with amusement on the frolicsome and exuberant antics of a young puppy playing around a serene and indolent old dog and can say to himself, "I, too, played like that when I was young, and I was good for not much else. Now that I am old, I cannot be so energetic, but I can be useful to a degree not possible in those early years."

The physiological limitations of old age arise because our bodies are composed of a group of co-operative organs. All goes well as long as each one performs adequately its role in the complex. It is when an important organ becomes impaired and fails to "play the game" that a break occurs. Sometimes the kidneys fail, sometimes the heart, or the stomach, or the lungs, and then the partly broken man must learn to live within his limitations, a course which requires wisdom and patience. He may lead a helpful existence for many years, Holmes' formula for longevity was to have a chronic disease and take care of it. Providentially, as long as the blood vessels of the brain supply that extraordinarily delicate and sensitive structure with an abundant supply of oxygen and sugar, clarity of the mental processes is preserved and pleasant social relations, as well as cherished activities, can be continued.

Institutions in which men are employed for a lifetime of service have found difficulty in devising a kind and considerate manner of discriminating between physiological and chronological age. Not uncommonly in universities professors are expected to retire at sixty-five or at some age between that and seventy. This expectation affects both those who are already senescent and those who are still alert. Obviously it is quite appropriate for the senescent, it is often a hardship for those who are still rich in ideas and eager to push forward studies in which they have been engaged. Deep disappointment of active investigators at being deprived of the opportunity to go on with their studies can be avoided, and preservations of the possibility that their labors may still be productive can be assured, if a sympathetic and generous administration provides them with laboratory space where they can satisfy their desire for further attempts at solving problems.

In Harvard University it is well recognized that at the age of sixty-five a professor may voluntarily retire on his pension, or the administrative body may ask him to retire or not to do so. On my sixty-sixth birthday I sent a letter

to the President announcing the date and placing in his hands my resignation, to be accepted whenever he might wish. A very gracious answer expressed the hope that I would continue in the services of the Medical School. That proposal was followed by four more years of happy associations. Then, after just fifty years in the University as student and instructor, I withdrew. I could not do so without acknowledging my deep obligation to my alma mater. She had given me every opportunity to learn, to be disciplined in workmanship, to become influential as a teacher, and to engage, with utter freedom, in physiological research. All that I had been able to accomplish I owed to the highly favorable circumstances which the University had provided.

I confess that retirement broke sharply habits established during many decades. There was a mingled feeling of relief and a queer sense of inexcusable neglect when the time for meeting students arrived and I was not there, in my accustomed place. By good fortune, after I had been "on the shelf" for more than a year, a call to be visiting professor at the New York University College of Medicine for three months resulted in my appearing vertical again before a roomful of medical students. I was confessedly an experiment. The object was to test the effect of introducing an outsider into a group of teachers and students, in order to learn what might result. I was not a professor of any particular subject—I was just a professor! Attendance at exercises in medicine, in neurology, in psychiatry, in public health, conferences with a group in therapeutics and talks with young investigators in anatomy, surgery and physiology, lectures to classes and to professional audiences—all these experiences, enjoyed in a most friendly atmosphere, restored relations which had been interrupted and—whatever they may have been to others—they were, to me, very stimulating.

In my lectures to the medical students I restricted myself to accounts of the scientific studies carried on by my collaborators and myself during the previous forty-seven years. As a result I relived my professional career as I first told about the simple primitive employment of the Rontgen rays in physiology, and went on to describe bodily effects of emotional excitement, the mechanisms of functional stabilization in the organism, the chemical mediation of nerve impulses, and recent researches on wound shock and the characteristics of rhythms in the cerebral cortex. The reader will recognize at once that to a great degree that is the survey I have made in the pages of this book. Here again I have relived my career as I have written about it. And now the story is nearly finished.

When I look back over the various stages of my life I remember, as I feel sure many others have remembered, incidents which have revealed how relative are the ages of individuals. In my teens my teachers in the high school, most of them in their thirties, seemed to me elderly persons, to be respected as much for their many years as for their learning. On reaching into the thirties myself I was a beginner in physiology and for the first time attended a meeting of the American Physiological Society. It was held in Philadelphia, and to

the delight of younger members of the organization Dr S Weir Mitchell, one of the founders—a medical investigator, an eminent neurologist, a novelist and a poet—was present to talk to us. He appeared to me to be so old as to be almost ancient. And now I find that, at the time, he was not quite my present age! Although I still seem to myself no older than I felt a decade ago I recognize that the changes of senescence have begun to appear and will probably increase until the end. In Dr Mitchell's words

I know the night is near at hand
The mists lie low on hill and bay,
The autumn sheaves are dewless, dry,
But I have had the day

1878 — 1940

HANS ZINSSER

IT IS from the study and experience of science that all my subsequent ideas which might be dignified by the adjective "religious" were derived. A particularly strong impression was made upon me by my first not too complicated course in physical chemistry in its exposition of the simple yet marvelous mathematical relationships of ionic concentrations, electric conductivity, freezing and boiling points, and osmotic pressures. The laws of conservation of matter and of energy in the inorganic world, and the carrying of these laws into the regulating mechanisms of life processes, followed. I lived through an era in which the various branches of science began to flow together, and in which what may be broadly called physiology is, as predicted by Claude Bernard, being founded more and more upon physicochemical processes. It is needless to follow this development in detail. It has been done so much better than I can do it by many men, notably by my friend Lawrence Henderson, in his *Order of Nature*. Moreover, my experience is that of innumerable others who, after long apprenticeships in the experimental sciences, have come to identical conclusions, at least as far as essentials are concerned.

Pasteur's feeling that "we can only kneel" in the face of the incomprehensible is actually nothing less than a reverently expressed confession of agnosticism. His Catholicism was the adherence to an ethical system of morals and submission to the eternal order which probably he would not have undertaken to define anthropomorphically. This surely is the case with two of my most intimate professional friends, both of them among the great bacteriologists of all time, one of whom became a Catholic at thirty, the other about a year before he died, at sixty-nine. In both cases, I am convinced from frequent conversations that their adherence to a church represented an urge for some form of symbolic expression of the conviction of an orderly purpose in the

harmonious operation of eternal laws. A subconscious streak of mysticism may also have played a part. In both cases, naked reason left them unsatisfied.

Darwin, in his letters, frankly declared himself an agnostic, for a reason that appears to me the strongest that can be advanced. "But there arises the doubt. Can the mind of man which has, as I fully believe, been developed from a mind as low as that possessed by the lowest animals, be trusted when it draws such grand conclusions?"

"I cannot pretend to throw light on such abstruse problems. The mystery at the beginnings of all things is insoluble by us, and I, for one, must be content to remain an agnostic."

A similar point of view comes from Clerk Maxwell, speaking of the supposed Regulator of causes and effects. "If he is the Deity, I object to any argument founded on a supposed acquaintance with the conditions of divine foreknowledge."

Subsequent experiences have often made me wonder why theological schools do not include a rigid discipline in the fundamental sciences. To be sure, it might modify religion in some of its most tradition-cherished minor superstitions. To offset this, it would almost certainly strengthen the inevitable conviction of the unalterable harmony of the natural laws which govern the universe and all that moves and lives within it. And on this, the revelation of the marvelous orderliness, is based, after all, the final refutation of chance and purposelessness.

The questions of immortality of the soul and freedom of the will, though they have called forth libraries of controversial literature, continue to appear not only utterly beyond any possibility of satisfactory proof but, indeed, trivial in being so definitely personal, once the principle of an all-pervading and ordering force is accepted. And the conception of a God so constituted that we are, as individuals, of direct concern to Him appears both presumptuous—considering our individual insignificance in the scheme as a whole—and unnecessary for that feeling of helpless reverence in face of the universal order which is the essence of religious experience. Moreover, palaeontologically considered, one would have to assume that such a "personal" God existed long before the evolution of man. "Why did He wait so long to create man?" asked Diderot. Yet reward, punishment, immortality of the soul in the theological sense, could have no meaning whatever, until there had developed creatures possessing a nervous organization capable of abstract thinking and of spiritual suffering. One cannot imagine such a God occupied through millions of years, up to the Pleistocene, with personal supervision, reward and punishment, of amoebae, clams, fish, dinosaurs, and sabre-toothed tigers, then, suddenly, adjusting His own systems and purposes to the capacities of the man-ape He had allowed to develop.

All this, of course, merely signifies that I have been utterly incapable of that "over-belief" which William James postulates as necessary to faith. Moreover, to give religious experience—as he does—a merely pragmatic value

seems both to be begging the question and to be making light of a grave problem. We cannot believe purely because it seems to be necessary to our equanimity and strength of character to do so. To paraphrase Professor James, placing my own modifications in brackets, one may say "Humbug is humbug, even though it bear the scientific [religious] name, and the total expression of human experience, as I view it objectively, urges me beyond the narrow scientific [theological] bounds."

Greater men and more devout than I have tried in vain to force their reason into beliefs that they so fervently wished to embrace, but could not. Luther said "Gott helfe mir, ich kann nicht anders." And I think of poor old Galileo, after his abjuration, muttering into his beard "Eppur si muove."

R S returned from his last professional journey badly damaged. On the steamer he was humiliated by the fact that not only occasional youngsters but even a British general of approximately his own age could outlast him at deck tennis. Also the sun, instead of tinging his skin a healthy brown, turned him the lemon yellow of the sunburned anaemic. He made a tentative diagnosis on himself before arrival in port.

So when he got home, he went to see an old friend, a doctor, who had pulled him through a nasty infection a few years before. This friend to whom he had gone was one of those precious individuals whom nature had meant to be physicians. He was fond of R S and showed it most helpfully by his affectionate abstinence from any expression of sympathy. And R S told me that, together, this good friend and he stood for a long time at the office window, looking out at the Charles River Basin. It was one of Lowell's June days, in the early afternoon. Bright sunshine was reflected from the water and from dozens of little white sails on the dinghies that were racing along the Cambridge shore. The Esplanade was alive with contented men and women, strolling and sitting on the benches, and the sounds of playing children came up through the open window like the voices of many birds. The world looked a bright and attractive place.

But in those few minutes, R S told me, something took place in his mind, that he regarded as a sort of compensatory adjustment to the thought that he would soon be dead. In the prospect of death, life seemed to be given new meaning and fresh poignancy. It seemed, he said, from that moment, as though all that his heart felt and his senses perceived were taking on a "deep autumnal tone" and an increased vividness. From now on, instead of being saddened, he found—to his own delighted astonishment—that his sensitiveness to the simplest experiences, even for things that in other years he might hardly have noticed, was infinitely enhanced. When he awoke in the mornings, the early sun striking across the bed, the light on the branches of the trees outside his window, the noise of his sparrows, and all the sounds of the awakening street aroused in him all kinds of gentle and pleasing memories of days long past which had left their imprints—indelible but, until now, not consciously realized.

—of contentment and happiness. It was quite the opposite of the “woe of the remembering of happy times” in Canto V of the *Inferno*, beginning “*Nessun maggior dolore*” and so on. R S felt a deeper tenderness for the people whom he loved, and a warmer sympathy and understanding for many whose friendship he had lost in one way or another. Each moment of the day, every prospect on meadow or hill or sea, every change of light from dawn to dusk, excited him emotionally with an unexpected clarity of perception and a new suggestiveness of association. Thinking of the shortness of the time still left him, he reread—as though for a sort of P P C conversation—the books that had meant much to him at the various stages of his life, and found them more moving, more deeply wise, or more hilariously robust, according to their natures. Everything that went on about him or within him struck upon his heart and mind with a new and powerful resonance. So, on the whole, he was far from either meriting or desiring sympathy. The only thing that depressed him at all in those days was the thought of horses. He couldn’t stand the sight of his saddles, his bridles, and the various bits that hung about his bedroom—and which he now packed out of sight in the cellar.

As his malady progressed, he had another variety of experiences which, to some others more conditioned to religious belief than he was, might have signified an intimation of the separateness of body and soul.

He said to me “Here I am, me as always. My mind more alive and vivid than ever before, my sensitiveness keener, my affections stronger. I seem for the first time to see the world in clear perspective, I love people more deeply and more comprehensively, I seem to be just beginning to learn my business and see my work in its proper relationship to science as a whole, I seem to myself to have entered into a period of stronger feelings and saner understanding. And yet here am I—essentially unchanged and except for a sort of distillation into a more concentrated me—held in a damaged body which will extinguish me with it when it dies. If it were a horse I was riding that went lame or broke its neck, or a ship on which I was traveling that sprang a leak, I could transfer to another one and leave the old vehicle behind. As it is, my mind and my spirit, my thoughts and my love, all that I really am, is inseparably tied up with the failing capacities of these outworn organs.

“Yet,” he continued, apostrophizing in a serio-comic mood, “poor viscera, I can hardly blame you! You have done your best, and have served me better than could be expected of organs so abused. When I think of the things that have flowed over and through you! Innumerable varieties of fermented hops and malt and of the grapes of all countries and climates. Vouvray, Anjou, Chablis, Haut Sauternes, Chambertin, Nuits-Saint-Georges, Riesling, Lachryma Christi, Johannisthaler, Berncastler, Saint-Julien, Clos de Mouche, Liebfrauenmilch, endless amounts of *pinard* and *vin du pays*, the sour wines of Alsace, of North Africa, and of the Pyrenees, the stronger ones of Spain—Oporto, Sherry, Madeira, Malaga, the Tokay of Hungary, sparkling vintages of Burgundy and of Champagne, Veuve Cliquot and her brothers Mumm

and Pommery, and the California brews bought in demijohns, to say nothing of the distillates—flavored and unflavored, cognac, Three-Star Hennessy, whiskeys—Scotch, Irish, Canadian, rye, bourbon, and the yellowish moonshine, colored with chicken droppings, from the Blue Hills, and gin—genuine and synthetic, Schlibovitz from the Balkans, Starka from Poland, and the vodka of the Steppes, Crème de menthe and cacao, Marie Brizard, Cointreau and Calvados

"No, no, my organs! I cannot feel that you have let me down. It is quite the other way around. Only now it seems so silly that you must take me with you when I am just beginning to get dry behind my ears."

Though he had these spells of half-humorous revolt against the idea that his personality and his increasing joy of living should be so helplessly at the mercy of his deteriorating body, he was still grateful that, in his case, it was this and not the mind that was going to pieces first. He was not, at any time, tempted to seek strength in wishful surrender to a religious faith in which far greater men than he had taken refuge just before death. When this had, astonishingly, happened in the cases of several of his intimate friends, he regarded it as a capitulation of the mind to the fatigue of suffering. Indeed, he became more firm in his determination to see things out consistently along his own lines of resignation to agnostic uncertainty—as his father had done before him. Moving further away, therefore, from faith in any comprehensible conception of God, he yet grew closer in conviction of the wisdom and guiding integrity of the compassionate philosophy of Christ.

As his disease caught up with him, R S felt increasingly grateful for the fact that death was coming to him with due warning, and gradually. So many times in his active life he had been near sudden death by accident, violence, or acute disease, and always he had thought that rapid and unexpected extinction would be most merciful. But now he was thankful that he had time to compose his spirit, and to spend a last year in affectionate and actually merry association with those dear to him.

1865 — 1945

ALFRED E. HOCHÉ

MANY people, for whom the achievement of complete clarity within themselves is no goal, do not work out any precise attitude to death throughout their entire lives. They avoid the unpleasant thought as much as they can. There are not a few who avoid attending funerals or even only entry into a church-yard, who make no will so as not to be reminded of the conditions under which it becomes effective. In company it is permissible to question the person with whom one is conversing about his intention to emigrate to America, but it would be regarded as impertinent and tactless were one to raise the question of his migration to the abode of the Shades. Indeed, a curi-

ous emotional compulsion which leads us to change the reasonable proposition. There is nothing that concerns us less than death, into its opposite. There is nothing that concerns us more than our end.

In a certain sense this formulation remains a signpost even for the wise man. From the very moment that one fixes one's eyes on the final point, all experiences group themselves in a peculiar manner. Anyone who accustoms himself to attribute to everything that happens to him only as much value as it will have some day when viewed retrospectively from life's end, experiences a very salutary transformation of his inner book-keeping. How much becomes unimportant—disappointments, loss of property, misfortunes of all kinds, and how valuable become other things which do not even appear as goals to those who strain after ordinary palpable pleasures. At first we live lightly and at random, for there is no hurry. Later, when the day draws to a close, one learns to live with discrimination, and to fill the years, which, like money, receive their true value only when they are numbered, with a content that is more consonant with our nature and the consciousness of uniqueness of our brief existence.

Not a few people approach the end in the same way that they have lived. I have never understood the satisfaction of the Lord's servants over deathbed conversions. What a paltry conception of a Heavenly Ruler must one have to believe that he will not be able to discern the worthlessness of a transformation born of fear and a feeling of annihilation, may we suggest that this is a projection into his consciousness of that of the converter who is happy at having yet been able to bend to his will a dying man, a sad relic of one who once walked proud and upright in the light?

I think that when my hour strikes, I shall extend to the ferryman, upon entering his boat, a hand which will not tremble.

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